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MILITARY FOOD.

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[*Conclusion.*]

NEW METHODS OF PRESERVING FOODS.

LET us first take up cold storage, refrigerating apparatus and ice machines. The perfection of this new class of machinery can be imagined when it is stated that the total cost of making a ton of ice is only 75 cents. In rooms for cold storage almost any degree of temperature can be maintained, though it is presumed that for extremely low temperatures—that is, below zero—the rooms are quite small. It is understood that the immense proportions and usefulness of this new industry have induced the manufacturers to unite in one grand building at the Columbian World's Fair. In the matter of preserving fresh meats by freezing, the inventions seem to be perfect. This cannot be better illustrated than by the following clipping from the *Chicago Tribune*:

“The importation of frozen meat into England is increasing year by year. From fifteen to twenty per cent. of all the mutton consumed in the British Isles comes from New Zealand and the River Plate, to say nothing of other sources of supply. Last year New

Zealand sent nearly two millions, and the Plate more than one million carcasses. Australia is coming to the front. In three years its exports of carcasses have risen from 90,000 to 340,000, and there is no doubt that the business in a very few years will assume vast proportions. Sheep raising has also been begun in the Falkland Islands, which exported 20,000 carcasses last year as a beginning. The whole of this trade has sprung up in less than ten years. What it may be ten years hence can scarcely be guessed."

Captain H. G. SHARPE, C. S., U. S. A., is authority for the statement that the French government is taking the initial step towards applying this new industry to the purposes of war. They have succeeded in keeping dressed beef in a perfect condition for three or four months with the present appliances. It can be assumed that the machine and cold rooms will soon be so perfect as to lengthen this time indefinitely. It has been found that the frozen carcasses can be transported in common freight cars three or four days in the hottest weather before there is any sign of deterioration of the meat. Cars could be specially constructed with double sides, between which will be non-conducting material to keep out the heat. In these it can be assumed that the frozen meat can be kept cold and fresh for a much longer time. Of course regular refrigerator cars would lengthen the time enormously. The wagon transportation from the railroad to the army in Europe is so short that it can be left out of consideration entirely—any covered wagon will do.

The French probably intend ultimately in time of war to let contracts for the immediate delivery to government storehouses of four or six months' supply of frozen meat for the whole army. The Department of Supply may keep it frozen until used, or perhaps that may be expected of the contractor under government supervision. As needed at the front it will be shipped in ordinary cars or specially constructed refrigerator cars.

In the United States, government cold storage rooms can be erected at many points, and a large supply kept on hand. Such a system will entirely free the army from the dangers attendant upon the failure of the contractors to live up to their promises, a failure that in the past has wrought incalculable harm. In case of a large foreign war, I am informed that the army can never be more than sixty miles from a railroad. This distance can be easily covered before the beef begins to spoil. The commissary officer of this post has calculated that it is perfectly feasible in the United States, even now, to buy in open market, and pack away in appropriate cold storehouses, enough fresh beef to supply an army of 1,000,000 for

six months. It would take about ten or twelve storehouses, 100 by 300 feet, and high enough for three tiers of beef.

A moment's thought will show what a revolution this matter of cold storage can make in military practices. It will obviate all necessity of keeping live cattle near the army, a system that so often results in diseased animals and fatal epidemics among the soldiers. It will help to wipe out of existence all the salt meats formerly supplied, and will thus avoid that large list of diseases of stomach, bowels and nutrition, that salt meats have been accused of causing. It will allow of a constant supply of fresh fruits and vegetables, the absence of which is the bane of field service. It will be the chief means of supplying that variety and generosity of diet which must be insisted on in the future. Of course cold storage can be of little or no benefit to the army in its present field duties on the frontier. The troops are in small and numerous detachments, at long distances from the railroads, all of which conditions would prevent any practical method of supplying fresh things. Rations must be carried along. In a great civilized war, it will undoubtedly play an important part, and unless it is taken up in earnest the greatest possible efficiency cannot be obtained from the troops. In peace times, at posts where beef is very bad, they could be supplied with frozen beef from other places. During several winters from 1867 to 1877, experiments were made in the Department of Dakota, by freezing beef and then packing it in snow until used. The loss in weight was very little, or nothing, even after two months. The reports of the officers were quite varied, some praising the beef to the skies, while others strongly condemned it, often on such absurd grounds as loss of nutriment by freezing. The soldiers liked it, as a rule, and made no complaints. The only reasonable objection was to the effect that the beef lost some of its flavor after two months. This may have been due to poor cooking or to the method of thawing, whereby the beef was exposed to a hot fire and the external parts converted into a species of dried beef. It was not as good as freshly killed beef. Beef kept in cold storage rooms need not be frozen solidly and then injured by thawing. It has not the above objectionable loss of flavor, but is said to be distinctly better than freshly killed. Even if it were not as good as freshly killed beef, it is decidedly better than salt meat, and it could be issued long before it began to deteriorate.

As mentioned before, the chief and almost the only method of preserving food has been by drying. The natural evaporation caused by the heat of the sun has been the only means of securing

dryness. New inventions have displaced this method in many instances. For a long time there has been in successful operation quite a variety of arrangements for drying foods either by means of hot dry currents of air, or by vacuum pans, quite complicated machinery being necessary.

Water is also excluded from powdered substances by means of pressure. Powerful machines are constructed that will allow of a pressure of several tons on a small surface. By these methods of drying by machinery there is placed on the market a large class of articles designed for picnic and camping parties. They are also designed to make housekeeping easy, and are in actual use for this purpose. There are compressed teas and coffees, coffee ready for use as soon as mixed with water, compressed, dessicated or evaporated fruits and vegetables, dessicated and powdered meats, and hosts of special articles that cannot be mentioned here. Among these there are numerous articles most excellent for field service at any place, but particularly on the frontier, where it is so hard to get any variety, where the ration must be dry, and where it is absolutely impossible to get the fresh things we have found so desirable. The army, with great profit to itself, can use the recent inventions in use in civil life. The great advantage of these things consists in the fact that they are perfectly available even where the transportation is limited.

These new processes are now being adapted to the needs of the army, in preparing new kinds of military foods. The Germans have been the first to take advantage of drying and compressing processes in the manufacture of a dried compressed bread. The great difficulty in the use of bread for field use consists in the inability to supply it so that it will keep a long time and be digestible. Hardtack is ruinous to many soldiers, as already pointed out. If baker's bread is compressed, it sinks into a heavy dough. Only strong stomachs can digest it, and it is far worse than the wet, soggy, hot, breakfast bread with which we cultivate dyspepsia. If the bread is merely dried, it is too bulky for transportation. By a new process, which probably consists in drying the bread and at the same time compressing it by improved machinery, the Germans have secured a variety of field bread which is spoken of in very high terms. Small bits of it, thrown into soup, swell up like a dried sponge when thrown into hot water. The soldiers are said to be very fond of it, and as far as known it is entirely successful.

The French are not far behind, as can be seen from the following quotation from *The Ontario Medical Journal* :

"The French Department of Intendance has been experimenting with dried bread, which is said to be superior for campaigning purposes both to biscuit and ordinary bread. From the results of the experiment, which are given in the *Revue du Service de l'Intendance Militaire*, it appears that this dried bread will absorb from five to six times its own weight of water, milk, tea, coffee or *bouillon*. Biscuit absorbs hardly its own weight of liquid, although when thoroughly dried it contains only about ten per cent. of water, whereas the bread contains from twelve to fourteen per cent. It can be made in cubes of convenient form for packing, and will probably be found to be a not less important improvement than those recently made by Germany in the same department, as it forms, together with the soup which it absorbs, a fairly substantial dinner, besides being simple, inexpensive and portable."

This new bread is probably the long wished for solution of the question of bread for field service.

CANNING.

Next comes that huge business, the canning of all kinds of foods. In all of these the processes are similar. The food is introduced into tin cans and the lids soldered on, a small vent hole being left open. The can is then kept in boiling water for a certain length of time, to kill all bacteria. While still hot, the vent is soldered up and no further entrance of bacteria is possible. Foods thus prepared will keep in good condition for quite a long period. Among the vast numbers of articles of this class, are some that are in use now by the army, for the field or in traveling, when cooking is impracticable, such as canned meats, fresh and corned, and canned baked beans, but there are many others that are available. It is needless to remark that very many articles, like canned asparagus and canned corn on the cob, etc., are not available, as they give too much bulk for little nutriment. Many canned articles are so thoroughly prepared, that as far as their uses in the economy are concerned, they are virtually fresh articles, if too much time has not elapsed since they were canned. General GREELEY used them in the Arctic, and General WOLSELEY in the Nile expedition, and both report them excellent, even after exposure to such extremes of temperature.

SPECIALLY PREPARED FOODS.

The next class of military foods includes those that are specially manufactured from many different articles. It is the most important to the military man, because it is the class that has the greatest effect in modifying the principles of strategy, as will shortly be ex-

plained. It is probably true, that from the most ancient times, attempts have been made to subsist armies on artificially prepared foods. PARKES, in his work on "Hygiene," gives a list of quite a number, but states that as a general rule they have been unsuccessful. The failure, or rather the limitations of success, have been due to lack of proper machinery; but possibly the greatest fault consisted in the ignorance of what a food should consist of. We have seen that new and efficient machinery has but recently been invented, and that much of the difficulty has been overcome. It is chiefly in recently acquired knowledge of the proper ingredients of a food that success is becoming possible, notwithstanding the fact that the knowledge is still only approximately correct. Here then is the place where the discoveries of physiologists are stepping in to give great aid to the men in command of troops.

These prepared foods consist of a powdered mixture of various partially cooked articles, so combined that there is the proportion of protein, carbohydrates, fats and salts which we consider appropriate for the food of a healthy man undergoing considerable labor. The only ones that have been highly successful are those composed chiefly of peas or beans. We have seen in the table that these leguminous vegetables contain quite a large amount of protein, and carbohydrates, and the fats, salts, extract of beef and flavoring extracts are added in the manufacture. The first of these successful foods is the celebrated "Erbswurst" or iron ration of the Germans. According to Captain SHARPE, "Erbswurst" is a combination of pea meal and other articles, invented by a German cook named GRÜNBERG, whose secret consisted in his method of preserving the legumine from the decay to which it is so prone. The German government purchased the secret for \$25,000.00. It was first used on a large scale in the Franco-Prussian War by the Second Army commanded by PRINCE FREDERICK CHARLES, who reported its great value to the War Ministry July 16, 1870. The food was composed of pea meal, fat and bacon, and an extensive factory for making it was established at Berlin under the supervision of Army Intendant ENGLEHARD. The factory commenced work on August 8th, and in a few days furnished the first 100,000 pea sausages which under the name of "Erbswurst" became so widely known. This article of food met with such general approval that for a long time the factory had to supply the whole army with it. The factory ultimately extended its business to making other kinds of meat preserves and altogether sent some 40,000,000 rations to the field army. Other factories were established at Frankfort-on-the-Main and Mainz.

This description of food had the advantage for the commissariat in being lighter for transport, and for the troops, especially for those on outpost duty, in being more easily prepared for consumption. The unavoidable sameness of the ration was successfully compensated for by the large stores of wine found in the neighborhood of Paris, and by the occasional issue of an extra ration of brandy.

PARKE's "Hygiene" states that when it was used too constantly not only did the men dislike it but it was liable to produce flatulence and diarrhœa. A soldier who has lately returned from a visit to Germany informs the writer that the soldiers in private conversation still speak of it in the highest terms.

It is understood that this food is given to the German soldier with strict orders not to use it until he is separated from the wagons and cannot get the regular ration. In using it he procures a cup of hot water into which he stirs the powder. It makes a rich, savory and nourishing soup. The "iron ration" has been lauded by enthusiasts as the chief cause of the German success in the Franco-Prussian War. Without Erbswurst it would have been impossible for the soldier to stand the fatigue necessary to carry out the plan of the campaign—human beings could not have made the effort. It is not known how much truth there is in such a strong statement.

On account of certain seasoning ingredients in Erbswurst English and American soldiers do not like it. Several years ago it was issued for trial to some U. S. troops and the reports are said to have been uniformly unfavorable. The English have overcome the difficulty by making a more palatable pea soup called Kopf's. It is entirely and eminently successful, and is in use in the field wherever there is a battalion of the British army. In the United States there are several firms which make these soups for family use, and they are excellent for the army.

TABLE XIV.—COMPOSITION OF SOME PREPARED MILITARY FOODS.

	Water.	Protein.	Fat.	Carb.- Hydrates.	Woolfber.	Ash.
Erbswurst.....	12.09	31.18	3.08	47.50	.....	6.15
Erbswurst, as first used... ..	.....	16.00	35.00	27.00	.....	.....
Erbswurst, 1887.....	.....	15.70	23.00	.....	.....	.....
Dried pea soup (1).....	7.58	16.93	8.98	53.44	1.34	11.73
Dried pea soup (2).....	8.08	15.81	24.41	36.78	1.69	13.53
Kopf's pea soup (used by the English army).....	4.78	21.09	17.25	46.45	4.40	6.03

In the table are arranged some analyses of these pea-meal mixed foods. The English pea soup appears to be drier than the others, and as the actual analysis above shows it to be so, it will probably keep better than the others. The percentage of fat though not great enough for American stomachs, is far more than the first specimen of Erbswurst. If it were more fatty it would not keep as well as it does. Several American firms make dried pea soups and it is regretted that analyses of their products are not available for comparison.

These prepared and partially cooked foods are never intended for sole use, and unfavorable comment may arise from the fact that they are not satisfactory when so used. They are inappropriate from lack of variety, and will produce sickness if solely used for any length of time. In our own field service they are intended only to piece out a notoriously rough and poor field ration. In time of war they are not to be used except upon rapid marches or just before or after battle when time does not permit of cooking, and the rapid movements keep back the regular ration. In such cases they are invaluable, but the return to the regular ration as soon as possible must be insisted upon.

SPECIAL USES OF PREPARED FOODS.

In the field in war times the transportation is usually insufficient. Officers of this military department know it and the subject receives constant attention throughout the world, for on it depends the success of the campaign. Notwithstanding all that is done, impediments will arise, break-downs occur, and roads become blocked. This always results in deficiency of food, for the rations in enormous quantities may be near by but unattainable, and the troops may be actually incapacitated for good fighting. This state of affairs may occur at any time and it is usually unavoidable. Again, in forced marches troops may be able to outstrip the wagon trains, and then they must carry their own food. Numerous field dietaries containing ordinary articles of diet have been suggested from time to time for those special conditions, but as they have had time to crystallize into some definite shape and have not done so, it is presumed that they are mostly impracticable. Reliance must be placed in some of the new prepared foods in such cases.

All these new foods are among the modern conditions which a military writer gives as affecting strategy, for let us see how much benefit these new foods can be in the way of permitting bodies of troops to cut loose from all supplies, as in the rapid movements to

get on the enemy's flank or rear. In the first place concentration of food can be carried to only a limited extent, because as already shown it is necessary for a man to have a certain amount of fuel in his food per day and a certain amount of material for repairs. Concentration only means the exclusion of the indigestible portions and part of the water. Thus the garrison ration gives to each man about five pounds of food, of which only four pounds are eaten, and it is impossible to condense this amount so that it will be much less than three pounds. All foods that are compressed and dried still contain from five to twelve per cent. of water. The German soldier's war ration is equivalent to about two pounds water-free food in the above sense. This is not enough for American soldiers during hard work, yet it is possible in an emergency to give the soldier fairly good nourishment with these improved foods, and not allow the weight to be over two pounds, as seen in the following table, in which the analyses are only approximate :

<i>Articles.</i>	GRAMMES.				<i>Calories.</i>	<i>Weights.</i>
	<i>Proteins.</i>	<i>Fats.</i>	<i>Carbo-hydrates.</i>	<i>Salts.</i>		
3 cubes dried compressed bread, 1 lb. each.....	35	4	250	2	1233	$\frac{3}{4}$ lbs.
3 pkgs. compressed soup, 6 ounces each.....	100	150	200	28	2625	1 $\frac{1}{8}$ lbs.
3 tablets compressed tea or coffee ready for use, possibly a tablet of dried fruit...						$\frac{1}{8}$ lbs.
Total.....	135	154	450	30	3858	* 2 lbs.

* Gross weight.

The composition of the bread is assumed to be the same as ordinary flour, and the tablets of soup can be manufactured of the given composition. As usually made, the tablets do not contain so much fat, which is here purposely increased in order to give the necessary energy. Even with this increase they would not contain as much as the first specimens of Erbswurst.

For purposes of detached service the U. S. soldier has been supplied, as seen in the following table:

<i>Articles.</i>	GRAMMES.				<i>Calories.</i>	<i>Weights.</i>
	<i>Proteins.</i>	<i>Fats.</i>	<i>Carbo-hydrates.</i>	<i>Salts.</i>		
1 lb. hard tack.....	50	5	340	2 $\frac{1}{2}$	1644	1 lb.
$\frac{3}{4}$ lb. bacon.....	27	236		8 $\frac{1}{2}$	2310	$\frac{3}{4}$ lb.
Coffee, sugar and salt.....				19		$\frac{1}{4}$ lb.
Total.....	77	241	340	30	3954	2 lbs.

These two dietaries have the same weight, and essentially the same potential energy, and their comparative values must be found in other characteristics.

It is not known how long a man can exist on the hard tack and bacon; surely he cannot retain his health very long, because scurvy and allied diseases will result. The protein (77) is insufficient for men doing hard work. This insufficiency alone will greatly reduce a man's vitality, so that he cannot stand fatigue nor the infliction of slight wounds.

During the Rebellion, when active operations were going on, soldiers were often required to keep four days' rations in their haversacks, but I have failed to discover what was the actual weight of food they packed away. The longest time any soldiers were entirely separated from the wagon trains was possibly five days (Chancellorsville). Five days' rations—ten pounds—is not much to carry, but it is possible that after much more than five days the men will suffer in health. No doubt men of great endurance could go for very much longer than ten days with such food and yet remain fairly active and strong; indeed, the North American Indian has so drilled himself that he can go as long as that with no food at all. We are to look at the endurance of the weaker soldiers, men weaker than the average, and we have already seen that the average is apt to be a very poor one.

In the above proposed ration the proteins are in almost double the amount of the bacon ration, and the fats and carbohydrates are more nearly in the proportions necessary in ordinary weather. In very cold weather the fats would have to be increased, but it is not likely that any military necessity in such weather will ever arise to separate many soldiers from their supplies; it can be safely assumed therefore that with this ration soldiers can exist for much longer than five days, and remain in fair condition. The actual time is of course impossible to determine, but it might be as long as three weeks, particularly if some of the digested foods to be mentioned could be carried along on pack-mules to revive men who show signs of tiring out. Put it down as low as ten days, and it can be readily imagined what a vast change that will make in the strategy of future wars. A commanding general constantly devises rapid military movements, necessitating detachment of bodies of men from supplies for the extreme limit of time *possible*. If he knows that he can safely detach a part of his army for ten days he can perform maneuvers now thought impossible, and if he devises a movement necessitating a detachment being without supplies for three weeks, he may

order it, even though he knows that one-half of the men will be more or less injured by the continued use of an insufficient ration. All this supposes that there will be methods of carrying along ammunition for such expeditions; but pack-mules can be used for that. The principles of defense will also have to be modified by these changes in methods of attack.

As to the weight carried by each man, it will not be too great for ten days—that is twenty pounds. In such cases soldiers throw away every single thing they can dispense with, knapsack, blanket and overcoat. In some cases they have retained only a piece of shelter tent and have been said to throw that away also, retaining nothing but haversack, canteen and ammunition. On the extraordinary occasion of being detached twenty days, they would have to start with the enormous weight of forty pounds of rations. It may be impracticable to do this, though it is possible to do it by throwing away knapsacks and all other articles that can possibly be dispensed with.

The total weight a soldier carries on his person when fully equipped for the field, including rifle and forty-five rounds ammunition, two days' rations, rubber blanket and shelter tent is about sixty-five pounds.

He may throw away and leave out—

	lbs.	ozs.
Overcoats.....	15	12
Blanket.....		
Blanket, rubber.....		
Shelter tent.....		
Clothing bag and contents.....	9 to 10	—
Contents of haversack.....	10	—
Total.....	35 lbs. nearly	

He will then have about thirty pounds total weight on his person, including rifle and ammunition, canteen, tin cup, and a bag for food. If he can load forty pounds on this he has a total of seventy pounds, which is about the weight of the equipment of the Belgian and Russian soldier, while it is less than that of the French (seventy-seven pounds). So we see that even if it is impracticable ordinarily, it can be made possible in extreme emergency, to detach men for twenty days. It will probably kill a few men, disable a few more, and greatly weaken a large number, but if they can accomplish the important object of their expedition, the loss may be insignificant in comparison with the results attained, and will be considered among the casualties of war.

Facility of packing and transportation is another point to be con-

sidered. The above special ration can be supplied in a paper package, either one ration, or better, in packages of one-half ration or one-third ration for two or three meals a day, and these can be packed in haversacks and knapsacks in a special contrivance. For a length of time more than ten days, the size of the bundles on a man's back would be enormously large, and would probably prevent the use of the ration for much greater time than this.

All this supposes that the soldiers are to be totally independent of the local resources of the country. As a matter of fact, the operations referred to are apt to be in settled localities and food will be procurable, and the amount available will of course determine the length of time the soldier can remain detached. The larger the body of troops to be fed, the more difficult it will be to find enough for them in the locality. Although small numbers, a regiment or two, may not be required to carry rations to speak of, large bodies, like a division or corps, may have to carry the full amount. The larger the number of soldiers, the more nearly will the length of time be governed by the amount of food carried along by each man. Pack mules if available, will of course lengthen the time, according to the number of animals. Each regiment of 1,000 men will require eight mules for each day's rations. We can throw out of consideration the raids of small parties of cavalry into an enemy's country for the purpose of destroying food and other supplies. Such parties cannot be hampered with any unnecessary weights on the horses. They must pick up their food as best they can. Other expeditions, like SHERMAN'S march to the sea, are expected to live on the country.

Ordinarily the soldier would have tablets of appropriate size to fit snugly in the bottom of his haversack, and two to five days' supply will be packed away, and constantly carried. Stringent orders will be issued forbidding any one to touch the ration until it is impossible for him to get the regular supply of the ordinary fresh ration. They have been made in the cylindrical form, to be carried like cartridges, and each cartridge is enough for a good-sized cup of soup. All these prepared foods are particularly useful in the field service of our own troops on the frontier.

PARTIALLY DIGESTED FOODS.

The practitioner of medicine is brought in contact with still another variety of prepared foods, of vital importance to him in his treatment of the sick. The partially digested foods have been in such great demand that a large number of manufacturers are constantly turning out new varieties for trial. As a result of all this

elaboration, the foods are becoming quite numerous and excellent. Formerly an infant deprived of its natural food had a hard struggle for life, because it could not digest any of the mixtures prepared for it. There is now a great improvement on such a state of affairs, and the infant is given food which does fairly well, though it is not perfect by any means. In the same way invalids formerly died of sheer starvation, because they could not digest the foods they swallowed. But now the partially or entirely digested foods are given, absorbed at once, give strength, and make recovery possible. The foods may be mixtures containing ferments and digestive substances, that do the digestion in the stomach, or the foods may be actually digested, then dried by machinery, and when needed are mixed with water and eaten. Some of these will be carried along in future wars, and kept in the medicine wagons and ambulances. It is hoped that many a soldier who has become exhausted on the march will be picked up, revived and nourished by such foods, and after a good night's rest be ready for duty with the line. No doubt such means will save to the fighting strength scores or hundreds of men who in former times were sent to the rear in advances, or left to die in the roads during retreats. Again, such foods in the hands of nurses and agents of Red Cross societies may be the means of reviving the wounded after battle. It is known that thousands of these unfortunates die of an exhaustion that is entirely preventable. They are found dead after the battle, with wounds that should not have been fatal.

Some of these foods can be so prepared as to be ready for use after mixing with cold water, and without cooking. They might be useful accordingly in Indian warfare, when fires cannot be lighted on account of the danger of informing the Indians of the presence of the soldiers. The probability is that when these occasions arise, the prepared foods would not be obtainable.

The manufacture of foods has grown into an industry of such immense proportions and importance that it was possible last year to hold an exhibition of these alone in Madison Square Garden, New York. Nothing was on exhibition unless it had gone through some process of manufacture. It was unique, in that it was the first, and it succeeded in opening the eyes of the public to the rapid strides made by this new form of American enterprise. It is to be regretted that there is no available detailed report of the exhibition, for it is presumed that there must have been numerous articles that would make excellent military foods, but which have not yet been proposed for that purpose. We must be content, therefore, with the

original intention of this paper; that is, pointing out the principles to govern in the selection of the future ration of the soldier.

OBJECTIONS TO PREPARED FOODS.

The one great objection to prepared foods is the ease with which adulterations and other frauds can be perpetrated. Quality of foods can be easily determined if seen in the natural state, but let them be ground up and mixed with other things, and fraud may be difficult or impossible to detect. Good housekeepers will not buy with their eyes shut. The above objection applies far more forcibly to military foods; where the consumer is never the purchaser, the cupidity and avariciousness of contractors are greatly stimulated. It is a strange fact that though contractors know that at times the lives of the soldiers and the safety of the nation may depend on the character of the army supplies, they will yet jeopardize the lives of thousands of men by fraudulently supplying inferior articles. The disasters and sufferings during the Crimean War were increased to a great extent by the poor grade of supplies. The military history of the United States furnishes a host of illustrations of operations, and even campaigns, being hampered or even made disastrous by faulty food. The German government escaped this dilemma by making its own Erbswurst, and if any government makes its soldiers' arms, ammunition, clothing and shelter, it can surely make their food. The objection is lessened when it is remembered that prepared foods are not intended as a sole diet, but merely to piece out the notoriously rough field diet, and the objection may entirely disappear by an efficient system of analysis and inspection. Above all this it may be argued that if easily transported prepared, cooked foods are to be a valuable innovation, it might be justifiable to run the risk of being occasionally furnished with inferior grades, a risk that we run in the majority of mercantile transactions.

During the Civil War, it is stated that roasted and ground coffee was greatly objected to on account of adulteration, but it has also been stated that the adulteration was done openly, ground and roasted rye being purchased for the purpose. In regard to adulterated coffee, the writer has seen somewhere a statement that the average soldier prefers coffee that is adulterated with chicory.

Another objection to concentrated foods as a sole and continuous diet, is the fact that they do not furnish enough bulk of food. Though they may contain the proper amounts of energy and alimentary principles, they can never be used exclusively. But they are not intended to be so used except in emergencies and for short periods.

STIMULANTS.

In time of great fatigue, in forced marches before battle, etc., it is the custom in European armies to issue rations of wine or beer as stimulants for the depressed soldiers. Public sentiment may always prevent this among the English speaking nations. As a good substitute, extract of beef has been proposed. It is excellent for this purpose, and no army in the field can be considered completely supplied unless it carries along large quantities. It is prepared by numerous manufacturers in the United States, and the various grades now on the market are quite excellent. It consists chiefly of certain stimulating chemical substances found in fresh meat. It is not a food in the sense of giving any appreciable nourishment beyond the few grains of nitrogenous matter it contains. Beef tea has been said to have essentially the same chemical composition as urine. Spirits can never be used in the army as a regular issue; the practice is thoroughly vicious and was virtually abandoned sixty years ago. In extraordinary occasions of great fatigue they are allowable in moderation. Under such temporary stimulation the men will brace up and perform the necessary work of making earthworks, etc., when without it, they would be too exhausted to do anything. Without stimulation a man is not worth much after he has made a forced march of forty miles.

COOKING.

It need be scarcely mentioned that cooking must be as perfect as possible. It is a matter of common experience among all military surgeons, that poor cooking in the field is a most fruitful source of much sickness and actual disability, and even death itself. The greatest efficiency can be obtained from the soldier when his food is so well cooked that it can be properly digested. Nothing can be said on the subject of cooking in garrison, because there is no reason why the appliances should not be as perfect there as in any small hotel in civil life. It is in the field that difficulty is experienced, and always will be. Cooking appliances are always heavy and cumbersome in proportion to their efficiency. In private houses the best ones are fixtures of the building, the little cook stoves having been discarded long ago. At present, the field cooking outfit is simple and primitive in type for small commands, but for the larger commands of one or more regiments there are more or less efficient ovens and so on. The ration has always been so simple and unvaried, that it is possible to cook it fairly well with the simple appli-

ances carried along. We have seen why it will be feasible and actually necessary in the future to make the ration liberal, varied, and consisting of fresh articles. As a matter of fact, if these articles are to be properly cooked, they will require greater care and more intricate appliances than are now supplied. Here, then, is a subject for considerable thought, in relation to the future military food, and it is our duty to experiment with every new invention of field cooking appliance that the available transportation will permit of being carried along.

Though the frying pan is a recognized evil in civil life, wastes food by making much of it indigestible, causes dyspepsia and untold evils, and is a general all around nuisance to physicians, yet it is well nigh impossible to do without it in the army, particularly in the field. A trapper or frontiersman will cling to his frying pan as his dearest friend, and the soldier's fire indeed admits of only the simplest kind of cooking—frying and boiling. The evil in the field is not so great as would be supposed, for it is well known that outdoor life certainly increases the digestive powers to a most wonderful extent. The writer once knew an officer who was a confirmed, pessimistic dyspeptic, whose diet had to be almost as carefully selected as a child's, and whose illness was probably due to lack of exercise, for when he took the field and was compelled to do fatiguing work, he ate large quantities of fried food, dripping in grease, and not only was he comfortable, but he grew fat and was actually cheerful.

The matter of cooking bread is receiving attention in the French army. After much experimenting, they have perfected bakery wagons, so devised that the sponge can be made during the day, while on the march. For each army corps there are enough wagons, bakers and helpers to prepare 57,600 rations of bread in two days of thirty-six working hours or one and one-half day's supply, the balance being supplied from the base, or carried along as hard tack or the new compressed dried bread. It is recognized that the soldier in the field must have soft bread instead of the hard bread on which dependence is now placed. If the above appliances prove impracticable, reliance must be placed on immense bakeries at the base, and fresh bread forwarded daily to the front, as was once practiced in the Army of the Potomac. As for field ovens for baking alone, the U. S. army is already supplied with arrangements, which for simplicity and efficiency, leave little to be desired.

The new things that have been pointed out in this paper are of course not in contemplation by the U. S. army, and their absence should not occasion any particular alarm. There is no special neces-

sity of becoming hysterical over the fact. The country is not going to engage in a war in any great hurry, and experience shows that the practical American seldom bothers his brains about inventing a thing until there is a use for it. When the occasion arises, the inventor is generally on hand. There is a danger, nevertheless, and a great danger too, in the fact that being unprepared for war involves a delay when the time does come—a delay that might turn out to be quite disastrous.

In this paper are many extracts from an article by the writer on the "U.S. Ration," published in *The Journal of the American Medical Association*, December 3, 1892, in which will be found the authorities for many statements here made.

TRADITION AND DRILL REGULATIONS.

BY CAPTAIN W. H. CARTER, SIXTH CAVALRY.

IN that era of our nation's existence, now happily past, when millions were freely spent in petty wars that civilization might pierce the Indian barrier on our frontiers, the necessities of each occasion developed men capable of handling the grave questions to be solved. The changed conditions which now confront us are such as American officers have not heretofore had to face. They require careful consideration, continued experiment, and a willingness to accept improvements, but not alterations merely for the sake of change.

Without the possibility of applying the crucial and only true test of service and war to proposed modifications, radical changes should never be made without apprehensions as to the result.

There has been a growing tendency on the part of officers to study foreign systems, which is entirely creditable to them; but in making application of European ideas, let us not allow a quarter of a century to dim the glorious memory of our cavalry divisions which so conspicuously aided in closing the Rebellion.

We have profited much by a study of the difficulties which surrounded the patriotic gentlemen controlling the affairs of the government in 1861. The grave question for the present generation is, are we so conducting our affairs and our studies, that in event of any call being made upon us, we could give a better account of ourselves than did the noble generation now so rapidly passing away?

The poor results, after such enormous expenditure for cavalry in the early years of the war, bring strongly the conviction that the organization, use and power of cavalry were but little understood at that time. The loss of horses was enormous, and in every sense wasteful, without adequate return in successful service. But later on, after varied and often humiliating experiences, the trick was

learned by a few masters, who led the hitherto despised Yankee squadrons from one successful field to another, with marked rapidity.

The present generation, however, has a very just complaint against the successful generals of the war, for the few who have left us memoirs have dealt too much in glittering generalities, and too little in the details of service and tactics used on the field of battle. The blunders, the happy accidents, the defeats, and glorious victories of the War of the Rebellion cover the pages of history most worthy of the young American officer's study.

Our cavalry then settled for us a few things which Europe has had under consideration ever since. We cannot afford to put aside our experience in favor of any foreign theories. England is still discussing the advisability of changing from double to single rank. We have no doubts on that subject. The German cavalry has resumed the lance, but we know too well the value of fighting on foot to hamper ourselves with such a weapon. Our young men discuss periodically the relative value of pistol and saber, but are too wise and conservative to think of casting aside the combination of arms that enabled the cavalry corps to become a "stem-winder" to LEE's army in 1865, when this ubiquitous body faced the Confederate horsemen at every turn with sabers, and were found behind logs and fences with carbines by every division of infantry which attempted to lead the way for the retreat.

We are forced to admit that in the past we have not achieved all that the drill books have demanded of us. Completeness is what is lacking, and but little real progressive instruction is given; so that efficiency of all the men in any one thing is hardly regarded as possible. Failure to accomplish more is not chargeable to want of time, or lack of enthusiasm on the part of troop commanders. Much of the unsatisfactory condition which faces us is due to the fact that the maintenance of a lot of frontier villages—misnamed forts—falls to the lot of cavalry commands. So heavy is the weight of this responsibility at times that at one post where the writer was engaged with a number of other troop commanders in teaching the new drill regulations, an order was issued directing all the troops to be brought in close to the quarters before recall from drill was sounded. The troops would be promptly dismissed, and troop commanders held responsible that extra-duty men were not delayed in reporting for work. The quartermaster selected the men under him to attend drill on certain days, without regard to the character of instruction being carried on at the time. There were no special reasons for this action which do not apply equally to all cavalry

posts on the frontier. The troops are reduced for drill to mere squads or platoons.

The skeletonizing and readjusting of four years ago, fell more blightingly upon the cavalry than is generally supposed. The orders disbanding two troops were followed by one reducing the number of men to sixty per troop, and without any further order or law on the subject being published, the number of men supplied to each troop through recruiting depots has been fixed at fifty-five. The result is, that troops habitually turn out for drill with two platoons of twelve men each, with occasionally sixteen men in one platoon.

The result of this, taken in connection with lineal promotion, and the temptations put before lieutenants to seek detached service of all kinds in preference to legitimate military duty, has been to eliminate much of the old time enthusiasm the younger element was wont to have for the troop and regiment. There is none of the old excitement attaching to frequent field service, and young blood does not thrive on tradition alone.

When the new drill regulations were published, the cavalry arm received them without prejudice, and went to work with the means at hand to learn them. We have now worked with a hearty good will for two years, and with some alterations in the line of simplicity, the cavalry will be entirely satisfied.

The application of the squad system to mounted work has not commended itself as applicable to our service. We must face the fact that our troops are never large, and a platoon of sixteen men is as small a unit as could well be effective on any line of battle. It is not intended to write a criticism of the drill regulations, for a competent board is now in session revising them. The squad system is mentioned, because that was the principal innovation in the new as compared to the old drill. The placing of corporals in command instead of tried and experienced sergeants, failed to develop that efficiency which was expected under the old systems.

It is a well merited compliment to the board which formulated the new system, that fewer decisions were required to make clear the meaning of the text, than in the case of any drill book heretofore issued. The gravity of the duty of preparing drill regulations, and the labor attaching to it, are not always appreciated by those who criticise. It is not always a question of what is best, but what is most expedient and applicable.

Many writers have run riot in demanding that nothing shall be drilled but what is clearly useful on the field of battle. Let us

avoid these extremists. We are wont to descant upon the decadence of discipline in these degenerate days, and conservative men who are not blind to the fact that we have splendid material in the ranks, believe that the traditional methods of instilling and maintaining discipline by exactitude of close order drill on the parade, is just as desirable as ever. This same element demands for the skirmish drill the utmost simplicity.

Every man in so expensive a branch of the service as cavalry, should be thoroughly and progressively drilled, until familiar with every duty. The only way to accomplish this in our service, is to adopt a system similar to that now in use at many posts for target practice, in which part of the garrison performs all guard, police and other routine duties, and the other part attends strictly to target practice. Two weeks drill in the spring, and a month in the autumn, after target practice, with every man in ranks, would give better results than is possible under present methods.

Personally, I regard the signal drills daily, requiring four men from each troop, and the litter drills, as conducted, farces, and of doubtful utility under any but most exceptional circumstances. It would be infinitely better to have the whole troop instructed for a week or ten days in litter drill, and the non-commissioned officers in first aid to the injured, than to keep up the drill as now carried on.

I recently witnessed a litter drill by the detachment of the hospital corps at Fort Leavenworth. While a supposititious patient was being placed upon the litter by four men, apparently "by the numbers," the assistant surgeon stood by with drawn sword, and the hospital steward with drawn saber. Such example as this is not fit to be put before soldiers of experience. A cavalryman leaves his saber on his horse, in order to attend to his duty on foot in a common-sense way, and such sights as that witnessed by me is not calculated to increase respect for hospital corps methods, or cause any enthusiasm on the part of cavalrymen detailed to take the course in addition to their other duty.

If we compare the recruits furnished us through the depots with the gangs of toughs sent out for some years after the Rebellion, any but the most prejudiced will admit the equality, if not superiority, of the material at present. Furthermore, if we compare the men we get from foreign services with our own, it makes us realize we have no cause for shame. All we want is a fair, common-sense plan to prepare these men to be the finest, as they are the most intelligent, soldiers in the world.

AN ARMY UNIFORM.

BY CAPTAIN H. F. KENDALL, EIGHTH CAVALRY.

A UNIFORM should possess the following qualities: It should be durable; it should afford the wearer protection from the weather; it should be made in such style as to furnish the wearer the fullest use of his physical faculties; it should be *uniform* and distinctive, at least in each corps; it should be neat and attractive, without being conspicuous. I was going to add that it should be soldierly, but any uniform filling these conditions would be most soldierly.

On the other hand, the eye and the mind stand in such relation to each other that any garb habitually worn by those who follow the profession of arms we soon get to regard as soldierly, in the narrower sense, however preposterous or unsuitable it may be. The grenadier and zouave, however dissimilar, are nevertheless soldiers, and their uniforms we readily concede as being those of soldiers.

The uniform should fulfill all of the foregoing conditions, and no others. The duty of the soldier is, in times of war, to march and to fight, to perform the fatigue work necessary for security and sanitation; in times of peace to maintain a state of preparedness for the higher duties of war, under conditions as closely similar to war as circumstances will permit. His clothing should therefore be adapted for such work, and for nothing else.

Turning to our own uniform, before proceeding to details I will state that the present color is open to but few trifling objections; but even if they were far greater, popular sentiment and historical association would demand that the blue remain unchanged.

Beginning with the head, we have the forage cap, the helmet and the campaign hat. The two former offer us object lessons in the military supremacy of the two leading nations of Europe, which

is just about the limit of their utility. The campaign hat covers and protects the head, shades the eye, sheds water so that it falls beyond the limit of the coat collar, and while lacking the nobbiness of the forage cap, is sufficiently neat and attractive. Nothing more could be desired. This certainly is the office of a head gear, and the cap and helmet do neither. The Adjutant-General's Department has issued to the soldier a hand-book, presumably containing a consensus of the most valuable opinions on all matters pertaining to his career. In this book he is earnestly counseled never to sit on the ground, but rather to sit on his hat. The forage cap does not present a sufficient superficial area; the helmet, offering the same objections, has the additional one of defective organic structure. None of these obtain in the campaign hat, and although I would advise the soldier to keep on his hat and trust to the seat of his trousers, still, if we must use our hat as a seat, let it be one that answers the purpose. This uniform hat, made of better material, of some regular shade of drab or dark blue, with a device denoting the organization to which the man belongs, would fulfill all conditions desired, and should be adopted as the only head gear of our army for all duty except in extreme weather, when hoods or fur caps should be allowed.

As regards coats, we have the dress coat and the blouse. The former will be noticed farther on. The blouse, a single-breasted sack coat of dark blue, is singularly well adapted for a uniform coat. It possesses every feature that could properly be desired, and should be adopted for the army as the only coat to be worn on all occasions. They should be made in two grades, one heavier than the other, for wear at different seasons. In hot weather, on duty other than ceremonies, the blouse should be dispensed with and the blue flannel shirt worn.

Trousers should be made ankle length and close fitting at the bottom, with buttons or hooks so that they may be removed without taking off the shoe. They should be made in two grades, one heavy and one light, of blue kersey, similar to the material issued about ten years ago. This was attractive and very durable, both in color and texture. The present cloth is far inferior in all respects. No reinforce for mounted troops is needed. They make the garment heavy and bunched where it is least required, and only add to the expense. The reinforce wears out a little sooner than the single thickness would, and then has to be patched, making three thicknesses of cloth under the seat. The ordinary trousers can be patched

when needed, and will outlast, looking better and being more comfortable than, the present ones.

The foot gear of all troops should consist of a laced ankle shoe, perfect in material and workmanship, made in a sufficient number of widths and sizes to fit any foot that would be accepted in the recruit. There is no article of apparel in which personal fancy varies so much, and the selection of which, by individuals, betrays so much stupidity as the covering for the foot. Personal vanity in this direction seems to be so potent that men will, if left to themselves, wear shoes, in spite of their better sense, which would soon become worthless, or so cripple the wearer as to make him so. It is important, therefore, that a thoroughly good shoe should be adopted, and being adopted, its wear insisted on. With such a shoe should be worn on all duty, except fatigue, by foot troops, a short legging or gaiter, and all mounted troops a knee legging. Whether these leggings are made of canvas or leather, are russet or black, buckled, buttoned or fastened with springs, are matters of detail only—the worst being better than the boot now worn. I have given the matter of footwear a most thorough test, both mounted and on foot, and know that the shoe with legging is so far superior to the boot, that it is surprising the latter has so long been adhered to.

Gauntlets should be abolished and a good, substantial buck glove of some neutral tint substituted. It would be well if these were made uniform throughout the army for all occasions; but the gauntlet should certainly be done away with. It is, like the boot, a survival of times and manners that we are well rid of. The blue overcoat should remain unchanged. The cape should be detachable, and should be lined with blue or grey. Nothing could be more absurd than the brilliantly colored linings now seen. They serve no useful purpose whatever, while they add to the expense of the coat and the difficulty of keeping it clean. They make the wearer unnecessarily conspicuous, easily seen and recognized at a distance, and a good target for an enemy. On the score of utility or necessity, these gay colors are utterly indefensible, and this alone should certainly condemn them.

For all mounted troops, an oiled coat, like the pommel slicker, should be issued. They are perfectly waterproof, will stand any climate, which the rubber poncho will not, and they completely protect, not only the wearer, but his saddle and pack, incidentally keeping dry the horse's back and loins—a very important item. In lieu of the bright yellow color now generally used they should be of a neutral blue gray. This shade could be obtained by laying

the oil on a coat made of strong blue jeans. This would render it less conspicuous and would not show the dirt and mud that necessarily get on garments of this kind. I know of no more perfect rain coat for horsemen than the pommel slicker, and it is surprising that the rubber poncho should have so long been supplied. For foot troops, inasmuch as the skirts of the slicker would impede their march, and as their feet and legs must of necessity become more or less wet, the slicker would not answer. A garment made like the poncho, but of similar material to the slicker, should be furnished; this would keep dry and protect the body, and being worn over the kit, would protect it also. The slit through which the neck passes should be provided with a collar and made to button closely after being put on.

For extreme cold weather we have had the buffalo coat, but its day has passed; the necessity for a substitute has been met, however, by the Mackinaw, or blanket lined canvas coat now issued. This is an excellent material. The canvas should be heavy and practically waterproof, and the lining all wool and loosely but well woven. Clothing made of this cloth is peculiarly well fitted for our climate, where sudden changes are the rule and a rain storm frequently precedes or follows an excessively cold spell; in this respect, although lacking the absolute warmth of the fur, it is far superior to the buffalo coat. Being made with the woolly side in, it is impervious to moisture. Its make up is, however, defective. The long skirted coat cannot be worn mounted and is in the way of the footman. Cavalrymen marching in the face of a cold wind, parting the skirts of the coat to protect the knees and thighs, leaves a gap in front where the cold strikes on the pit of the stomach, causing discomfort and sickness. Then, the coat works up on the saddle behind and uncovers the legs. The same material should be used, but should be made into a short coat, with high, rolling collar. The sleeves to close well down on the wrists, and the coat to fasten either with buckles and straps or else frogs and loops. It should be double breasted and made with inclined pockets large enough to easily admit the full gloved hand. In addition to this coat, there should be made, of similar cloth, overalls, full regular made in front, but cut out at the seat. This would prevent bunchiness in the saddle, the fleshy part of the buttocks requiring but little protection, and by closing in front the lower part of the body would be fully shielded. There would be no coat skirts to incommode the wearer and but little, if any, additional weight, the cloth to make the overalls coming from the amount now used in the skirts. With such a suit, with

fur cap and thick woolen mittens worn over the glove, the feet covered with German or felt socks and arctic shoes, we could defy any weather, however cold, and a winter march would be shorn of all its discomforts, while the men would be so little hampered by their clothes that they would retain largely their powers of action. The brown canvas fatigue clothing should continue to be issued, but should be rigidly restricted to fatigue work only, and its present frequent wear when not on duty severely discountenanced.

For stable duty I would retain the present white clothing; it thoroughly protects the soldier's uniform from dust and dirt, and by its color indicates to the troop commander that it needs the attention of the laundress in those cases when the personal pride of the wearer fails to make him change.

This completes the soldier's uniform for all duties and for all seasons. It is all that he needs and it is also all that he wants. For ordinary wear, when not on duty, white collars and cuffs should be supplied, also full length trousers similar to those now issued.

To sum up: he has a good, serviceable hat, a neat fitting coat and trousers, with leggings and comfortable shoes; he has a good overcoat, a rain coat that will keep him dry, and for extreme cold weather suitable garments which, in protecting him, give him the full use of his arms. Chevrons and stripes of present pattern should remain unchanged. For entertainments, balls, and at all times when off duty or on pass, his uniform is the same as that now worn, except that the forage cap has been replaced entirely by the hat. The whole question of administration has been simplified and the cost of the clothing materially reduced.

The uniform for officers should conform in general to that of the enlisted men. It might be of finer material and more careful makeup to accord with the better means of the wearer. Trousers of full length being habitually worn, and the present boot for mounted officers authorized for ordinary garrison duty. The shoulder strap to be retained. It is more than ever important that the officer should wear some mark of office, particularly in action, which can be plainly and readily recognized by the soldier; this the shoulder strap does as well or better than any device which might be designed. It has been objected by some that they make the officer too easily recognized and marked down by the enemy; to such it may be urged that modern combats will rarely be pushed to the limits within which the shoulder strap can be seen, and when within such limits it becomes more than ever important that the officer's presence should be clearly manifest. The objection after all is trifling, but to those who insist

I can only advise that they had better, like PERSEUS of old, go to the Nymphs and get from them the helmet of invisibility, or else seek security by a timely resignation.

The full dress uniform, so-called, should be entirely abolished; if it ever had a purpose that purpose has been served. It is neither needed nor wanted by the army. The commander in chief of the British army, before a parliamentary committee on this subject, recently stated, in response to the question as to the necessity for the brilliant uniform, in substance if not in words, that MARY ANN liked the bright uniform and that TOMMY ATKINS liked MARY ANN; that, with a voluntary system of recruitment and without such an inducement, the ranks could not be kept filled. This answer recognized, as it were, the fallacy of such a uniform, but gave fair reasons for its continuance. Such reasons do not obtain in our army, but the fallacy remains. The Duke of Cambridge's remarks, good in themselves, are in striking contrast with an article, endorsed by a high ranking officer, which recently appeared in one of the leading New York papers, in which this officer not only insulted a brave body of troops but betrayed great ignorance of the military regulations of the second State of this Union. Some of the Pennsylvania National Guards, just returned from the labor troubles at Homestead, appeared at the Columbian parade in New York City in their regular uniform, or what we of the national forces, less progressive than the State of Pennsylvania, designate as undress or rather marching order. The people, then present, recognized these men as soldiers in the highest sense of the word and applauded them to the skies, an applause shared by only one other organization, which also appeared in simple yet eminently suitable uniform: the blue jackets from the warships in the harbor. The others in the procession, in garb manifestly unfit for any duty, were allowed to pass in silence, some few instances excepted, when the personal popularity of the organizations redeemed them from their preposterous costumes. The reasons given for the tirade against these troops was, in short, that they had committed a breach of etiquette (measuring their rule by that of the city club man) as if any uniform could be more appropriate for soldiers to honor a hero or an event (I quote from the article) than the one in which they would fight their country's battles, the one in which they may in future be called upon to celebrate. I need waste no more time on this officer's strictures, which seem as little merited as they were liberally bestowed. The whole episode would be of no value did it not show us why we are encumbered with our grotesque full dress: that a soldier should have one uniform to be a soldier

in, and another in which to play at soldiering. One more lesson it teaches us: that the American people also honor and respect the service uniform.

We have no MARY ANN and we have no TOMMY ATKINS. Our full dress catches no recruits. We wish for no men who would be caught by its absurdities. The number of good soldiers kept out of the army because of it is greater than that of the indifferent recruits attracted by it. It is never worn except by order, and then with manifest dislike; the individual soldier takes no pride in it, but he does in his blouse and trousers. The full dress coat is worn ill-fitting and grotesque, as it is drawn from the quartermaster.

I will defy the world to produce a finer looking soldier than a well set up infantryman in the United States army, in neat fitting blouse and trousers, campaign hat and gaiters, his leathers well blacked and brasses polished; he looks what he is, a man and a soldier, fit for any duty; adorning his uniform rather than being adorned by it. The same could be said of our cavalryman; he is marred only by his heavy boots; but what a contrast when they appear in full dress?

When I was at West Point, we studied a text book which said that "the soldier going into battle should put on his full dress, it was an honor due to a brave foe." This book, written by one who, it may be needless to add, had acquired his martial ardor in the peaceful days which followed in Europe, the Napoleonic tragedy, absurd as it was, was based on conditions which do not now exist. Formerly, the soldier had but one coat, which was his uniform coat, a fact which still lives in our present nomenclature when the full dress is called *the uniform coat*. Better sense has prevailed, and the fatigue coat or blouse has in fact, if not in name, become the uniform coat, and the full dress, no longer used for ordinary wear, has been driven from the battle field and the drill ground, and is now only worn on occasions of ceremony. Let us hope that it will also soon be driven from these, and no longer find a place in our clothing allowance. The ceremonies themselves are of no value, except for the possible military instruction imparted by them. This purpose could be better served if the soldier entered on them in the fatigue uniform, so called, or the one in which he would put the information so gained to a practical test.

THE BATTLE OF ANGOSTURA (BUENA VISTA).

TRANSLATED FROM THE SPANISH OF MANUEL BALBOTIN,*
BY CAPTAIN F. H. HARDIE, THIRD CAVALRY.

SUMMARY.

HEADQUARTERS SAN LUIS POTOSI.—ARRIVAL OF GENERAL SANTA-ANNA.—CONCENTRATION OF FORCES.—CONTINGENTS OF THE STATES.—THE BAD IMPRESSION MADE ON THE ARMY BY THE PUBLICATION OF ARTICLES AGAINST IT BY THE PRESS OF THE CAPITAL.—GREAT SCARCITY OF RESOURCES IN ORDER TO CARRY ON THE WAR.—FORCES OF THE STATE OF SAN LUIS.—REVOLUTION OF GENERAL SANTA-ANNA.—MARCH OF THE ARMY.—STRUGGLE WITH THE ELEMENTS.—CONCENTRATION OF THE TROOPS AT THE HACIENDA OF THE ENCARNACION.—MARCH UPON AGUANUEVA.—COMBAT OF THE 22D AND BATTLE OF THE 23D OF FEBRUARY.—THE RETREAT.—MISFORTUNES OF THE ARMY.—THE RETURN TO SAN LUIS POTOSI.—OBSERVATIONS.

EARLY in October, 1846, General SANTA-ANNA arrived in San Luis Potosi with the greater part of the military forces which were in the interior of the Republic, and established his headquarters. Thereupon he ordered the division that had evacuated Monterey and was now at Saltillo to fall back to San Luis—a most unnecessary disposition, because, in the first place, there was a seven weeks suspension of hostilities, and therefore there could be no fear of a conflict; in the second place, because the presence of the troops in Saltillo would rouse the people of the States of Coahuila, Nueva Leon and Tamaulipas to form guerrillos, harass the enemy and interrupt his line of communication with the Rio Grande. It would have been better that the forces that were forming in the camp at San Luis Potosi should not have been required to make a retrograde movement, but much more advisable to have advanced them to aid those who found themselves in front of the enemy.

* Formerly a sub-lieutenant of artillery in the Mexican army, 1847; now, 1893, a colonel of artillery, retired.

Moreover, in case of the termination of the armistice, should it have been agreed to withdraw that advanced guard, it could easily have retired upon Matehuala, and from there it would serve as a support and refuge for the guerrillos who would be harassing the Americans, and would cover at the same time the City of San Luis.

Another disposition of General SANTA-ANNA was the evacuation of the Post of Tampico. It was not indeed prudent to leave a garrison isolated at such a great distance, but the manner in which the evacuation was accomplished is without doubt censurable. Without necessity, he did this with great precipitation. He did not carry into the country the material of war before abandoning the post. Neither did he arm the people with the implements that were there; and when the nation cried out for these things, they threw into the river, without compunction, cannon, arms and munitions. That this was done by order of General SANTA-ANNA, I am induced to believe, but General PANODI, who commanded the place, should not have obeyed the order.

There arrived in San Luis, within a few days of each other, the forces from Saltillo and Tampico, and two States of the federation remained in the hands of the enemy. From this moment they took into consideration the fortification of the City of San Luis. On the north and west of the city were commenced works of small capacity, in the plowed ground, full of trees, and constructions that could not be quickly destroyed, in order to obtain open ground the better to fire and to take away shelter from the enemy. At the Sanctuary of Guadeloupe was commenced a more formal work. It was a closed fort, with bastions and demi-lunes, which formed a regular pentagon. Although much work was done, it was not brought to a conclusion.

The troops were exercised frequently; the infantry by brigades under their generals, but never was seen a general exercise, not, at least, of a division. The cavalry maneuvered only by regiments. The General-in-Chief did not present himself during the instruction, even by chance, and could not appreciate the respective worth of the troops under his command. Sundays the troops went to mass, then took a turn about the city and then went to their quarters.

There was no council of the superior officers in order to confer in regard to the operations of the campaign, nor had any plan of operations been projected; nevertheless, there was in all corps, as there should have been, schools for officers.

During the months of November and December there arrived substitutes for the army. There also arrived the troops raised in the States of Guanajuato and Jalisco. These troops were generally

badly armed; in bodies among them could be seen arms of all kinds; and the greater part had no bayonets; there were noticed many guns good for nothing, with leather thongs or cords in place of bands. Among the troops from Jalisco were found those raised in the last revolution. In general, all were badly dressed and equipped, especially those from Guadalajara.

As to their instruction, it was completely elementary. Recruits composed the greater part of the contingents raised by the States; no care was taken to give them the slightest instruction in firing, and for this reason many soldiers were to fight without ever having fired a gun.

Among the defects of the General-in-Chief was one which produced the greatest evil; that was the preference and protection shown to certain bodies of troops to the detriment of others. The regiment of hussars, with its high pay and numerous officers, consumed much more of this kind of levy than the others. In order to keep up its full strength they placed in it small bodies of the men raised in Guadalajara at the time of the Pronunciamiento, with this result, that this body which had distinguished itself by its exclusiveness, received in its lap officers inferior beyond all conception. In the infantry, the battalions First, Third and Fourth Light and Eleventh of the line, were protected.

The sappers and miners, Second Light (infantry) and First, Second, Third, Fourth, Fifth, Tenth and Twelfth of the line, were small in size and poorly equipped. The actives of Mexico, of Querétaro, of San Luis, of Aguascalientes and of Morélia, found themselves in the same condition. The auxiliaries of Guanajuato, of Leon, of Celaya and of Guadalajara, although in goodly numbers, were as badly off, with a poor armament, especially the first three. There arrived also some bodies of cavalry, "Volunteers of Bajío," but as will be seen hereafter they were no credit to anybody.

In the middle of November was terminated the armistice, which was made at the capitulation of Monterey; the event was celebrated by music at reveille and retreat in front of the house of the Commander-in-Chief. The order of the day was a sort of proclamation to the troops. General SANTA-ANNA ordered that a division under the command of General D. GABRIEL VALENCIA should occupy Sierra de Tula, which was said to be fortified. General SANTA-ANNA reviewed the troops on the plain of Guadeloupe. The division was composed of the Battalion No. 12, Battalion Fijo de Mexico, Battalion Guarda Costa, and the veteran company of Tampico, the squadron of San Luis, and the volunteer cavalry of Guanajuato;

in all 2,000 men, three cannons, eight-pounders. Shortly after this force occupied Sierra, an American division, commanded by General QUITMAN, proceeded from Monterey via Victoria in order to embark at Tampico. In passing by the springs of the Sierra the march of the Americans was prolonged and disordered, owing to the narrowness of the way and to the weak condition of the men, and it is even said that many of the soldiers were drunk.

It appears that the inhabitants of Victoria and other places of Tamaulipas offered to fight the Americans if the troops would attack them. At the sight of the enemy everything was in readiness in the section commanded by General D. MANUEL ROMERO. It is said that just at this moment General VALENCIA received a positive order from the General-in-Chief prohibiting, under the strictest responsibility, any action which would bring on a fight. The Americans followed the road without molestation, the people remained grief-stricken and disconsolate, and the troops were profoundly disgusted. The volunteers of Guanajuato disbanded entirely.

This act caused much sad reflection. For what reason was a division placed in the Sierra if not to fight the enemy? What harm could have resulted from an engagement with the Americans, even if the troops should have gotten the worst of it? Or was it that General SANTA-ANNA did not wish to allow another general to acquire the glory of a triumph?

The immediate result of this affair was the loss of the cavalry of the Bajío, and the separation from the united command of General VALENCIA, leaving at the head of the division the General of Brigade, CINIACO VAZQUEZ.

At the end of the year 1847 the situation of the army was as follows: In Tula of Tamaulipas, the division of General VAZQUEZ. Two or three battalions of small strength and the greater part of the cavalry occupied Bocos El Venado, Matehuala, El Cédral and San Juan Venagas. The headquarters, with the greater part of the infantry and the regiment of hussars, were in the San Luis Potosi.

It cannot be denied that the State of San Luis Potosi distinguished herself by her patriotism and services in this war. She had aided the army with money, and by the blood of her sons, and the people had supplied provisions for the army, and worked themselves personally for their welfare. Notwithstanding this, the Republic did not heed the patriotic fire, the enthusiasm of a people who rose *en masse* to defend their homes.

The aspect of the city was tranquil, and had it not been for the presence of the troops, which gave it a certain martial appearance,

one would not have believed that the nation was engaged in a just war against the strangers that invaded it. The Army of the North was badly paid, as was natural, taking into consideration the penury of the treasury. It had no other preparation for the campaign than the construction of munitions and the repair of material of war; nevertheless they were storing provisions in the districts in which the army would operate. There were no hospital ambulances, without which no army can march; nor could they think of tents, made necessary by the rigorous winter, for these the Mexican army had never been used to. It would take weeks, if not months, to have all the things necessary to perfect the organization of troops arriving from so many different directions, many of them being hastily levied.

For the reasons given above, the putting in motion of these masses, so poorly prepared, should not have been thought of; but unfortunately, the General-in-Chief did not have the liberty of action that was necessary. The Government, impelled by popular opinion, which was impatient for active operations, without calculating the difficulties to be surmounted, exercised constant pressure on the General in order to hasten the campaign. The press, without foreseeing the consequences of its imprudent conduct, exasperated by the inaction of the army, loaded it with contemptuous reproach, painting San Luis as a new Capua, where, the military giving themselves up to pleasure, were consuming the wealth of the nation, and forgetting completely the cause of the country. Each mail that arrived from the Capital produced in the army an explosion of disgust.

The newspaper called *Don Simplicio*, on account of its jocose and cynical character, was the one that most wounded the feelings of the military. These writers, forgetting that the Mexican Government never had the ability to organize and to attend to an army; that our soldiers were always badly paid, badly fed and badly clothed; that in San Luis was found the remains of the Army of the North, which had guarded our frontier for more than ten years, fighting constantly, now with barbarous Indians, now with the Texans, without receiving, since when the Lord only knows, even the smallest part of their dues; that the chiefs, officers and troops had to work personally in order to furnish the food; but inspired by the sound of the call to arms, now to fight, now to make expeditions through the desert, without wages, without more rations than one could carry in their pockets, they did their duty nobly.

At best it was necessary to assure these unfortunate soldiers that if they did not obtain victory it was certainly not their fault, since

they were obliged to fight under so many disadvantages. They became more demoralized by these writers who prejudiced public opinion against them; but finally there came such a degree of exaltation that nothing was thought of but marching. They did not take notice of the lack of important things; that they needed rations and money. They wished to close with the enemy, and whether conquered or conquerors, they would show the nation, by shedding their blood, that the Mexican soldiers did not merit the censures that were heaped upon them.

The General-in-Chief, who also came in for his share of the indignation of the people, was anxiously endeavoring to put an end to a situation so trying. He pledged his own credit to borrow money, in order that the army could be put in condition to march.

By this time word was received that General DON JOSÉ VICENTE MIÑON, who commanded a brigade of cavalry, had captured, at the Hacienda de la Encarnacion, two field officers, four other officers, and seventy men of the enemy's troops. It is also said that another party of the enemy who had entered the Cañon of Santa Rosa, had been destroyed by the inhabitants.

Jan. 26th.—The order has been given putting the army in motion. Half pay was distributed to the General, chiefs and officers, and baggage was prohibited. It is enough to say, that the half pay of a sub-lieutenant of infantry was eighteen dollars, which will show plainly to what privations the subaltern officers were subjected.

Jan. 27th.—There set out on the march: The battalion of sappers and miners, three companies of foot artillery, the company of Irish volunteers, escorting three iron twenty-four-pounder cannon, on wagons; three single pieces, sixteen-pounders, mounted; one seven-inch field mortar; five field pieces, twelve-pounders; two field cannon, eight-pounders, making a total of fourteen pieces, which, united with the three field pieces which were with the division of TULA, made seventeen pieces of artillery, which number was entirely too small for sixteen thousand men. Calculating three pieces of artillery for each thousand men of infantry and four for each thousand cavalry, there would be needed for the army, for—

12,000 infantry.....	36 pieces.
4,000 cavalry	16 pieces.
Total.....	52 pieces.

The fifty-two pieces should have been light field pieces, on account of being easy to transport, although the park of siege artillery, to which park belonged the twenty-four and sixteen-pounders, might

have been found useful in the remote case of the enemy being shut up or surrounded in a village.

To resume: The army had no more than eleven field pieces; that is to say, less than a field piece for each thousand men. It is a well known fact, that the more inferior the troops are in quality, the greater necessity is there for a greater number of cannon to support them. Unfortunately, our army was composed in great part of men who were entirely inexperienced in war, while it was well known that the Americans were strong in artillery, and notwithstanding this consideration, it appears that we had the temerity to carry little.

San Luis certainly did not lack light cannon to form two or three batteries, nor troops to serve them; there were more than enough people in the first brigade of the army for this purpose, in addition to two batteries of horse artillery, which, unhappily, were detailed as a guard for the general park, with the exception of two platoons, serving two eight-pounders, commanded by Captain D. IGNACIO BAL- LASTA. As a last resort, the Irish volunteers could have been used, because they had been exercised already in the service of the pieces. It is incredible that so many blunders, contributing so much to the bad result of the campaign, could have been committed. The lack of field artillery was soon seriously felt.

Jan. 28th and 29th.—The Fifth Brigade of Infantry, under command of General D. FRANCISCO PACHECO, departed; January 30th, the First and Second Brigades of Infantry, composed of eight battalions of the best troops, commanded by Generals D. JOSÉ CONDÉ and D. FRANCISCO PERÉZ, set out; January 31st, the Twenty-second and Third Brigades, under the command of General D. LUIS GUZMAN, took up their march; they were composed of eight battalions, with the exception of the Fourth of the line; the "Actives" of Mexico and Aguascalientes were formed of raw, undisciplined troops.

Feb. 1st.—No movement.

Feb. 2d.—General SANTA-ANNA, with his aides, chief of staff, and the commanding generals of artillery and engineers, and the chief of the Medical Corps, etc., set out, escorted by the regiment of hussars. Although it had been ordered that no baggage should be taken, just the same as with the minor chiefs and officials, nevertheless they not only took all they could, but also pack mules loaded with provisions. This first journey was made by traveling the greater part of the night, and they slept at the Hacienda de Bocas.

Feb. 3d.—From Bocas to Vernado; on the road, we meet the seventy Americans made prisoners at the Encarnacion on the 23d

of the month before. It rained all day and consequently we arrived at the Vernado drenched.

Feb. 4th.—From the Vernado through Charcos to Laguna Seca. Rained all day; on the march met twenty-nine Americans, who were made prisoners by General MIÑON.

Feb. 5th.—To the Ranchos de la Punta, through the Haciendas de Solis and the Repesadiro. General SANTA-ANNA continued on as far as Hacienda de la Presa. The retinue passed the night in la Punta.

Feb. 6th.—To Matehuala, leaving to the left the Hacienda de la Presa. The brigades that were at Matehuala continued their march forward.

Feb. 7th.—To San Juan Vanegas by Ojo de Agua and El Cédral.

Feb. 8th.—General DON FRANCISCO MEFIA, with the Third Brigade of Infantry, arrived. The General-in-Chief stays in Matehuala.

Feb. 9th.—We continue in Vanegas. The Second Division of Infantry, under command of General D. FRANCISCO PACHECO, arrives. Preparation of the existing forces here; formation of the advance guard. In consequence, the divisions will be composed of the following bodies: First Brigade—Second Light Battalion; Battalion of San Luis Potosi; Battalion of Morélia; Battalion Actives of Celayo. Second Brigade—Battalion Actives of Leon; First Battalion Auxiliaries of Guanajuato; Second Battalion Auxiliaries of Guanajuato. The battallion of sappers and miners and the artillery remained under the immediate orders of the General-in-Chief.

Feb. 10th.—A general order warns us that to-morrow the march will be continued. The Quartermaster-General, General D. PEDRO AMPUDIA, arrives.

Feb. 11th.—From Vanegas to the well of the Animas. Very cold, wind and snow.

Feb. 12th.—From Animas to the Salado. Cold, rainy, and some snow.

Feb. 13th.—The night before some soldiers and some women died of cold. The troops, starved, stiff with cold, refused to march; nevertheless it was not necessary to resort to force in order to produce obedience. Encamped in front of the Hacienda in two lines formed in close columns of battalions, with the artillery on the rear and flanks. There is a rumor that the march will not be continued because the enemy is near.

Feb. 14th.—We remain in camp. The brigade commanded by General DON MANUEL MARIA LOMBARDINI, which had arrived at Noria from Animas, was forced to return on account of bad weather.

This state of affairs was the cause of our detention at the Salado. Three soldiers who were frozen to death were buried. Rain and snow continue falling. At 10 o'clock at night the General was sounded, and we were warned that the march would continue on the following day.

Feb. 15th.—From the Hacienda de Salado to the Rancho de San Salvador. The weather improves. Camped in two lines in front of the Rancho, supporting the right by a battery and six companies of foot, and the left by two companies of horse.

Feb. 16th.—Remain at San Salvador. In the evening, the Second Brigade, which formed the first line, passed to take a position as rear guard of the right flank of the Second, occupying some corrals. The artillery fell back to the second line.

Feb. 17th.—From San Salvador to the Hacienda of the Encarnacion. In this place was found the detached brigade of cavalry which was under the orders of General D. MANUEL ANDRADE. Last night these fired upon some Americans, who fled, leaving a pair of field glasses and a bag with provisions. It is known that the enemy can be found encamped at the Hacienda of Aguanueva.

Feb. 18th.—Remained at the Encarnacion. General SANTA-ANNA arrived at 11 o'clock A. M. At 5 o'clock in the evening arrived the brigades of infantry with three eight-pounders, which were commanded by Generals GUZMAN and TORRES, and which had been left at Tula under the command of General D. ANASTASIO PARRODI. General SANTA ANNA inspected the line on foot.

Feb. 19th.—We continue at the Encarnacion. The brigades of the Generals D. FRANCISCO PEREZ and DON JOSÉ GARCIA CONDE have arrived. During the night there was great alarm in consequence of the firing by the police guard upon some deserters, and which was taken up in part by the line. The camp was not formed according to regulations, but was in the shape of a pentagon, in a single line, with one of the sides covered by the cavalry. In front of the lines there were no other troops than the police guards, a few paces out from the center of the battalions. Further out, neither grand guards, nor advanced posts, nor patrols, nor sentinels, nor detached bodies in observation. The enemy could have been right in among us before we could have known it. This strange mode of camping, as well as other practices which were in use in the army, contrary to the science of war and the commands of the regulations, was constantly going on. This state of affairs was caused, without doubt, by the system of recruiting, the means used in raising levies, resulting in the troops deserting whenever the occasion presented itself.

This circumstance compelled the generals to keep the troops grouped together, thus depriving themselves of the means of security which should have been used. Hence, it is worthy of notice, the great disadvantage under which we labored in fighting against a general (TAYLOR) who could use even the last of his soldiers for all kinds of duty.

Feb. 20th.—General SANTA-ANNA reviewed the army, and found that it amounted to 10,000 infantry, 4,000 horsemen, and sixteen pieces of artillery, of which six were siege pieces—that is to say, useless in the country in which we had to operate. Attention has already been called to the fact of General SANTA-ANNA's remissness in having supplied the army with so small a number of pieces of artillery. The general order warning the army to get ready to take up the march the next day was published. Each soldier was to carry two rations of dried beef, a pound of flour, and sufficient water, since none could be got until we reached the Aguanueva. The officers did not busy themselves much about supplying their own wants, since they were provided the same as the troops.

Between one and two o'clock in the afternoon the troops commenced to defile out, which operation terminated at about four o'clock in the afternoon. The march was made in a single column and with the artillery and train, occupied a distance of some twelve miles in length. The order of march was as follows:

Vanguard—Four battalions of light infantry, battalion of sappers and miners, three pieces of artillery, section of park artillery, regiment of hussars, the first division of infantry under command of General D. MANUEL LOMBARDINI, with four cannon, the second division of infantry under the orders of General D. FRANCISCO POCHICO, with four cannon, the third division of the same arm under General D. JOSÉ MARIA ORTEGA, with three cannon, the division of cavalry commanded by General D. JULIAN JUVERA, without artillery, the general park and the provisions of the corps.

The rear guard was composed of a brigade of cavalry commanded by General D. MANUEL ANDRATE. General D. JOSÉ VICENTA MIÑON, with one thousand two hundred cavalymen separated themselves from the army in consequence of a special commission.

The army had hardly been put in motion when an icy wind commenced to blow from the north, which increased proportionately with the approach of night. During the darkness, we passed the Tanque de la Vaca, celebrated for the frequent exploits of the savages, which at this season was dry. In the middle of the night we camped on the Llano de la Guerra at the edge of the Puerta del

Carnero. The battalions went to sleep formed in columns, the cavalry keeping their reins in their hands.

Notwithstanding the prohibition against fires, the women of the soldiers and the scullions, burned the leaves of the mountain palms on both sides of the roads; in consequence, we could see the camp illuminated in all directions, the light making a wierd contrast with the profound darkness of the sky. Soon the bad example spread, and the troops and even the officers burned the palm leaves also. The General-in-Chief, from his carriage, where he passed the night, saw the affair, and took it with quietness and patience, as much on account of its origin as for the rigor of the cold, the violence of the wind and the lack of shelter for the troops. Hardly anyone could sleep.

The enemy probably having notice of our march, redoubled his advanced guards and posts of observation. In spite of the apprehension of a terrible battle at the break of day, all desired the coming of the day on account of the change of temperature, for it would then be warmer.

Feb. 22d.—The day dawned cold. At 6 o'clock in the morning the movement of the army commenced upon the Hacienda de Aguanueva, prepared to enter into the conflict. As has been already said, the evening before General D. JOSÉ VINCENTE MIÑON separated from the column with the object of accomplishing a special mission. This operation aimed at cutting off the retreat of the enemy by posting himself behind his rear guard upon the road to Saltillo; consequently the army thus marched in two columns upon divergent lines.

When the vanguard of the principal column, composed of the light troops, arrived before Aguanueva, it found the Hacienda abandoned. The enemy had destroyed all that he could not carry away, killed the animals and set fire to the Hacienda. Without giving time for the troops to drink water or fill their canteens, they were obliged to continue the march with quickened steps. All the cavalry passed at the gallop by the right of the column, in order to aid the vanguard in the pursuit of the enemy, who was supposed to be in full retreat, filled with demoralization. One could almost believe it on seeing the road strewn with goods from the sacked ranch and four or five abandoned wagons in different places; but the enemy had possession of the Hacienda of Buena Vista and the Puerto de la Angostura, and there waited with the greatest tranquillity.

When General SANTA-ANNA, who was with the vanguard, per-

ceived the presence of the American army, he found himself in a very critical position. He could not count on more than four light battalions and 2,500 cavalry, who had little service in this country. If the enemy, descending from his position, had attacked General SANTA-ANNA vigorously, the latter would have been overthrown, and his routed force falling back upon the main column, whose bodies were at a great distance from one another, and not having any reinforcements, it would have met the same fate as the vanguard. General SANTA-ANNA knowing this, without doubt, tried to gain time; indeed, he sent a negotiator to the camp of the enemy in the person of the Inspector of the Medical Military Corps, General D. PEDRO VANDERLINDEN, who is supposed to have had instructions to detain General TAYLOR as long a time as possible. Ostensibly he went to demand the surrender of the American army, announcing to the General of the army that he was surrounded by 20,000 men. As was to be expected, General TAYLOR rejected the summons, but afterwards took advantage of this piece of bravado, in order to affirm that he had been attacked by 20,000 Mexicans.

While this was going on the battalions were arriving and forming line of battle; but the rear of the column did not get into position until about four hours afterwards. Having traveled about sixty miles in twenty-four hours, not having slept, the troops arrived in front of the enemy more or less exhausted. The army formed in several lines, occupying the elevated points offered by the ground; the General occupied strongly a high elevation, *A*, upon which our right flank rested, and which the enemy had neglected. He put off straightening out our lines, *B B*. The artillery from both camps exchanged shots without doing any damage. In the meanwhile the battalions that were in line relieved one another in filling their canteens in a little stream of crystal water which flowed from the lines of the enemy and traversed ours. General TAYLOR observing the light troops occupying the hill to our right, immediately ordered his riflemen to impede them; this produced quite a lively combat, and when the light came on it found our soldiers the possessors of the ground, occupying the disputed eminence. The sounds of the trumpets of the First Light Battalion announced to the army that the hill was ours, and that the enemy was defeated. This produced great enthusiasm among the troops. In this combat Captain D. LUIS G. OSELLO distinguished himself. The night passed in quietude; the combatants passed the night in peace, and the American army made its fires.

The position of the two armies are marked on the map No. 2 appended hereto, the Mexican, "*M*," and the American, "*A*."

The enemy's position at Angostura gave him an incontestable superiority over us. The chains of mountains running thus parallel, coming close together at this place, formed a very narrow gateway. The heights to the right are higher than those to the left; the declivities prolonging themselves, forming hills which occupied nearly half the width of the valley, bounded by the heights mentioned above. The waters descending from them have cut deep gullies which come down almost perpendicularly to the road which ran from Aguanueva to Saltillo terminating, as is natural, in the lowest part of the valley. But the waters deposited in this spongy soil soak up rapidly; the earth dried by the ardent rays of the sun, cracks open, producing fissures in the soil which make this place almost impassable even for men, who can cross only with much difficulty. The road which runs along the foot of the hills, following the sinuosities which are presented, separated our ground from that of the enemy.

The Americans occupied to their right quite a high hill which rose from the spurs running perpendicularly to our left; the spongy and impassable ground to which I have referred before, serving as a defense. Along the eastern part of this hill passes the road to Saltillo. The American line of battle stretched from this road to the heights on our right which protected their left wing. They also made use of the boggy ground referred to and of the ravines that extended along their entire front. General SANTA-ANNA occupied only the ground to the right of the road, with the exception of one battalion which was posted in observation in the pass *O*. Thus the right of the enemy's position was unattackable, his front extraordinarily strong, and his left very well protected by the heights.

In the side of the mountains to the left, there are two narrow passes which are marked by the letters *P* and *Q* (see the map), which could be used by troops to cross up and over the mountains or heights and fall at an opportune moment on the flanks and rear of one of the combatants. But neither General SANTA-ANNA nor General TAYLOR thought of this operation which would have been decisive.

Having now an approximate idea of the configuration of the terrain, a thing so necessary to a proper judgment and understanding of the battle-field, it will not be out of place to make a comparative examination of the two armies which are about to engage each other.

The American army although formed by means of voluntary en-

listment, is composed of men of a civilization relatively advanced. The government amply remunerates its armed force, and it never suffers its employés to be behind in pay, for the treasury is always full. The clothing is of good quality; the food healthy and abundant, and the pay higher than in other armies. Notwithstanding the fact that the United States is republican, the regulations for the government of the army are severe and the discipline perfect. The instruction of the officers is very extensive, for in the regular army no one is admitted as a subaltern officer without having passed a satisfactory examination upon the conclusion of his instruction at the military school. Promotion to the superior grades is by seniority or for merit. Sergeants are not permitted to pass into the grade of officers. The generals are officers who have obtained distinction in their profession.

The weakest element of the American army is the volunteers, whose field and company officers are named by themselves or by the authorities of the States furnishing volunteers. When an individual has prestige enough to raise a regiment, he is usually named its colonel, and he appoints his officers. These forces are for the most part but little disciplined, commit disorders in the country in which they operate, and the day that their term of enlistment expires, should the humor strike them, they will disband and leave the service, even should it be on the eve of battle. In campaign they shoot well and fight with more frenzy, if they wish to, than do the regulars, but they have not the constancy nor the solidity of the latter. Of this class of troops the American government can raise any number it desires.

In war the American army does not depend for its subsistence upon the resources of the country where the operations take place. Its Commissary Department was supplied by transportation of supplies from a base, or by means of contracts that were generally paid in cash. In consequence, it always found itself well supplied with healthy food, so that even in the middle of the desert the soldier was as well fed as if he were in the center of population.

The wagon trains for the conveyance of the general park, of subsistence, of the treasury, and of equipage were perfectly arranged. They were composed of light wagons with four wheels, drawn by eight mules, and could go anywhere where light artillery could, and follow the army on its longest marches; these trains are the property of the government, or of contractors who supply them of uniform patterns.

The armament of the infantry of the line is a percussion gun

capable of carrying a five-hundred grain bullet, with a bayonet, and is charged with a ball and three buckshot, the powder being of a superior class. The cavalry, which can be classified as mixed or dragoons, use a carbine, pistol or saber, and are mounted upon large horses. The artillery is the system of Paixhans; the eight batteries are composed of six-pounders, twelve-pounders, and of twenty-four and thirty-six-pounder mortars. The batteries have ammunition wagons, which follow everywhere in order to keep them supplied during the combat.

As to the number of troops General TAYLOR had at Angostura, I can judge only approximately from what I saw. The Americans formed in two lines, with a reserve; and our attacks were always met with lines of equal extension to ours.

Giving to the cavalry the just importance which it should have, they were relatively weak in this arm, and consequently strong in infantry, whose organization was perfectly adapted to the ground which it defended. The number of field guns, many of them light, all drawn by magnificent, large horses, appeared to number twenty-six. Part of these guns could maneuver on the most difficult part of this ground.

To sum up: the American army must have presented in battle from six to eight thousand men, with twenty pieces of artillery, in a very strong position.

Knowing this much about the American army, let us pass to a study of our own. As is known, the Mexican army is raised by what is termed the levy, that is to say, they take by force in the street those persons, who by reason of their humble station in life, can offer no resistance to the violence that is done them. Conducted to the quarters, they are obliged, under the switch of a corporal, to learn the manual of arms, the most indispensable in the service, and some other evolutions. As might be expected of a system of this kind, none enter the ranks but the most ignorant and abject of the people; that is to say, from among those that have the least interest in defending the country. Neither the diseased, nor the possessor of a large family, nor the vicious, are excepted from liability to service; and among the multitude of unfortunate ones that are torn from their firesides, the native race (Indian) furnishes commonly the greater contingent.

The wages are small, and badly paid. There have been troops for many years who have not received their full pay, and many times would have perished had they not resorted to manual labor in order to gain the necessary subsistence. Showy clothing is given

to the troops who find themselves in garrison in the large cities, in order to take part in the civil and religious festivities; but those that are far away lack many things which are absolutely necessary. Actually, in the army that marched to Angostura there were battalions that carried nothing on their bodies but some worn-out great-coats; that lacked blankets and capes with which to shelter themselves, and whose shakos were of palm leaves lined with printed cotton.

The food which was given to our troops consisted of a ration not always good nor abundant, which was charged to each individual at twelve and one-half cents daily; but in the field, where there was lacking the means or the time in order to prepare the ration, on account of the long marches which our troops were obliged to make, they issued to each soldier a piece of raw meat, some tortillas, or a small handful of corn.

The regulations governing the Mexican army are the same that ruled during the Spanish domination; but on account of the revolutions discipline was notably relaxed. The officers were a heterogeneous lot; one part coming from the military college, the other coming from the class of sergeants, and likewise the army was increased, not alone by inferior classes, but also by peons, with whom the ministers wished to ingratiate themselves. Among us there is no volunteer militia properly so called, but during the revolutions it was customary to raise irregular forces with distinct designations, which were commonly included in the army.

So far as the rationing of the troops in the field was concerned, the government troubled itself but little. During the march of a force, whoever commanded it fed it from whatever resources could be found on the road. Nor were provisions carried in bulk, for even had they had them, they could not have carried them, owing to a lack of means of transportation. In the present campaign the only provisions that were collected at the Encarnacion, except the steers that were killed there, were some sacks of flour, a very small lot of sea biscuits, a few two-wheel carts, loaded with sugar in cone-shaped cakes and some brandy. Our army had no proper trains to transport its munitions and equipage, and when marching the troops employed pack-mules or the large carts of commerce of different styles and construction.

The armament of our infantry consisted of old English guns—flint-locks—carrying a ball weighing 700 grains. The cavalry, which was no other than light cavalry, found itself armed, one part with sabers and a flint lock carbine, while the others, and by far the

greater number, used in addition the lance. The artillery belonged to the Griveaubal system, already out of date, containing a diversity of calibers, and mounted upon heavy and rough gun-carriages; there were lacking large mortars, which are of great effect. The guns were drawn by mules, harnessed with traces passing direct from the collar to the whipple trees, that made it extremely difficult to maneuver them. Neither in range nor in movements could they compare with those of the enemy (with the exception of four batteries of horse artillery). The batteries lacked proper ammunition wagons in order to supply them during a combat, using for this service the backs of mules, with a thousand inconveniences.

The number of men the Mexican army presented in the battle of Angostura was very far from being that claimed by General TAYLOR, as will be shown as follows: On the 19th of February the army passed in review at the Hacienda de la Encarnacion with 14,048 men, of which 3,837 were cavalry. General D. JOSÉ VICENTI MIÑON separated from the army with 1,200 horses on a special mission, so that the army set out from the Encarnacion with 12,848 men, that is, supposing that from the 19th of February to the 21st there had been no desertions, which cannot be presumed, we having been in camp during that time. During the twenty-four hours of marching, making a greater part of it by night, and struggling with difficulties, it is believed to be no exaggeration to suppose that not less than 500 men straggled and deserted, leaving thus 9,271 infantrymen, a number a little superior to that presented by the enemy.

Certainly we were very superior in cavalry, but the benefit that might have been derived from this arm was entirely nullified by the configuration of the ground. On the other hand the artillery of the enemy had great superiority over ours in numbers, as well as in quality. We could not count more than eleven pieces of field artillery, that is to say: five eight-pounders, five twelve-pounders, and one small seven-inch mortar. As for the rest, sixteen were siege guns, which in an evil hour were brought along, and which could not be utilized, except in certain situations. But the greatest superiority of the enemy consisted in the advantageous position that he occupied.

I believe the necessary facts upon which to form a correct judgment in regard to the events which I am going to relate, have been given.

Feb. 23d.—During the night nothing unusual occurred except some firing of no importance, which lasted only a few minutes. Hardly had there appeared in the horizon a faint ray of light, than there

commenced from the hill *A* a lively musketry fire. The enemy, reinforcing his troops, attempted to dislodge ours, who defended themselves well. In order to support this attack the Americans advanced their first lines as far as *DD*, forming in order of echelon with the right refused and strongly entrenched, advancing detachments as far as *EEE* in order to defend the crossings of the first ravine. Following this they detached a large column with the idea, no doubt, of supporting the attack upon the hill, and enveloping our right, then occupying the hill, it not having been possible to open the way by a front assault. The troops that passed the night upon the hill *CC* which commanded the road and formed the extreme right of the American line were moved to the center in order to reinforce it.

While this was taking place our troops commenced to move, marching to the front. The battery of horse artillery, composed of five eight-pounders, commanded by Captain BALLASTA, was posted at the point *G*, which was a very commanding position. The first line of infantry supported by the second descended into the first ravine, under the enemy's fire, forced the pass *EEE*, occupied the hill, and forming line of battle delivered a lively musketry fire. The result of this first shock was the capture of a four-pounder cannon, one of those captured by the enemy at Monterey, and causing the enemy much loss, and holding the position occupied. The capture of the cannon is in dispute between the battalion Querétaro and Aguascalientes.

By the road covering the left of the line of battle, marched a column *H*, composed of sappers and two other battalions, under the command of Colonel of Engineers, D. SANTIAGO BLANCO, but not being able to deploy in such a boxed up place, nor to suffer in inaction the fire of the enemy's battery at *L*, Colonel BLANCO changed the direction of the column and crowned the hill, which was to his right, where the combat had been raging furiously.

At the same time that our left and center were having these successes, the right was rolling back the enemy, who had attacked the hill, in spite of the reinforcements it had received, the light troops descending from the high ground, charging with the bayonet upon the Americans, who were retiring in disorder, suffering considerable losses. In this charge our soldiers showed implacability, wounding with the bayonet all those within reach. In vain many Americans, flinging away their arms, showed to our soldiers the rosaries with which they had been provided, crying out that they were Christians. In these movements musketry fire was going on throughout the whole line.

The great American column that supported the left of their first line advanced intrepidly upon our left; but the five pieces that BALLASTA commanded, in whose battery was General MICHELTORENA, by order of the General-in-Chief, delivered a fire so spirited and certain upon that column that one could see that every once in a while it was obliged to halt in order to re-form.

At this stage of the affair the light troops deployed in line of battle at the point *J*, struck the flank of the enemy's line, pouring into it a lively fire. The column, struck in front and in flanks, and also by the battery of BALLASTA, being unable to advance, halted and endeavored to deploy in some way, but soon confusion ensued, and the men dispersed completely, leaving the field full of fugitives. This episode of the battle is represented on the accompanying map, and can be said to have been the crisis of the engagement.

The first line of the enemy, seeing itself outflanked on the left, could not sustain itself, and fell back as far as *LL*, protected by the second line. Our troops could not follow immediately, because having suffered much, it was necessary to re-form and reinforce them with the second line. Some of the bodies, made up more or less of recruits, had a large number dispersed.

Those of the enemy had been rallied between the second line and the reserve. The Light Brigade, whose mission should have been to strike the American lines in the flank, while the other attacked in front, carried away by enthusiasm, or perhaps in obedience to orders, abandoned the place it occupied, and forming in column, pursued, advancing by the skirts of the mountains to the right, until it arrived at the Hacienda de Buena Vista at *M*, where it met an energetic resistance, but for want of artillery it could not accomplish anything. It met with considerable difficulty in retiring, for General TAYLOR, with his reserve troops, hindered its return to our field.

The battery of Captain BALLASTA left the position that it had occupied, and with a great deal of hard work, succeeded in crossing the ravine, and advanced as far as the point *N*, the center of our line, where he went into battery and delivered anew his fire. Our extreme right was then left without artillery. I believe, that with a little increased effort, the twelve-pounder battery could have been carried to the place which the eight-pounder occupied, and the battery (eight-pounder) could have been placed on the right of the line of battle in order to support it, and in order to cross its fire with the first. It is incomprehensible why this determination was not taken, inasmuch as the battery of twelve-pounders had hardly fired

a shot during the day, for in its emplacement it was hidden by the inequalities of the ground.

The cavalry advanced, divided into two grand columns, one of them marching along the skirts of the mountains to the right, and the other on the left hand side following the Saltillo road. They both left some squadrons in reserve. The column that marched to the right, traveled at first without meeting any obstacles, but later engaged in some combats up to the Hacienda de Buena Vista, overthrew the cavalry of the enemy, causing it to retire on being attacked, compelling the enemy perforce to bring out the reserve to his aid at the Hacienda.

Part of the regiment of cuirassiers, having passed through the enemy's lines, found it impossible to return to ours. During the advance of this column, the following incident occurred: The commander of a squadron of a regiment of hussars, D. JUAN LUYANDO, was about to lance a rifleman, who, getting down upon his knees, implored mercy. LUYANDO let him alone and passed on. The rifleman raised himself immediately, and firing upon him, to whom he owed his life, shot him from his horse, piercing him through and through with a ball. The murder of the commandant was in an instant revenged by his soldiers.

The left column being in a cooped-up position, and being struck by the battery at *I*, could not continue by the main road, but changed its direction to the right, and passing by the rear guard of the first line, maneuvered for the right wing, sustaining several combats as far as the Hacienda de Buena Vista, whence it was obliged to retire, because it could not overcome the resistance with which the Hacienda opposed it. These isolated attacks against a strong edifice could not produce favorable results. If the light troops and the cavalry had been directed simultaneously upon the flanks and rear of the enemy's lines, while they were yet engaged in front, the success would have been complete.

Much sorrow was caused by the fact that while the troops were fighting so gallantly, forcing the enemy to give ground, some recruits suffered great dispersion, and that some of the squadrons of the reserve, seeing the road to Aguanueva filled with fugitives, did not make an effort to detain and reorganize them.

It cannot be denied that the Americans fought valiantly, nor that their General maneuvered with skill, but notwithstanding all this their forces had lost the battle from the moment in which our troops overwhelmed the left of their lines. Notwithstanding the faults committed by our generals, and in spite of the lack of direction at

the critical moment noted above, the position of the American army was a perilous one. This, without doubt, was the judgment of General TAYLOR also, for he was commencing to prepare his retreat by the Saltillo road. Probably it was his design to retire by echelons, for which movement the ground was admirably adapted, and adopting these measures, gain the city of Monterey. If that retreat had occurred, our troops would have charged with greater vigor; our cavalry, profiting by the clear places, would have left the enemy no repose, and would have obliged them to leave on the field part of their war material, if it did not terminate in their complete rout before arriving at Monterey. But, unhappily, none of these things came to pass.

The train of the enemy's wagons, which had initiated the retreat, gave notice of the presence of the cavalry of General MIÑON, and not being able to advance further, nor hoping for troops to protect them, since they were all engaged in the battle, found no other resource than to retrace their steps and form a redoubt with the wagons rendezvoused at the Hacienda de Buena Vista, in order to augment the resistance. The dust and great movement of that column of wagons returning at the trot to the rancho on the Saltillo road, caused the belief at first that the Americans were receiving reinforcements, but immediately applying the field glasses and making observation, it was found out what was really taking place.

General TAYLOR was then, without retreating, enclosed in a narrow pass, with both ends occupied by the Mexican army. But the enemy had provisions, while we could not count upon securing one ration per man, nor had the officers any food, consequently it could not be hoped to oblige TAYLOR to surrender through hunger. It was indispensable to destroy him with arms. So, then, the scheme of employing the column of cavalry against the rear guard of the enemy, turned out contrary to our expectations. The maxim, "*A enemigo que huye puente de plata*," (to a flying enemy a bridge of silver) would have been well to observe at this moment. From this time on, General MIÑON took no part in the battle. It was 11 o'clock in the morning, and the struggle went on with ferocity. The number of our dead and wounded was considerable. General LOMBARDINI, who commanded a division, General D. ANGEL GUZMAN, who commanded a brigade of cavalry, and many chiefs and officers, had been conducted to the ambulances. The Americans had re-formed their lines, after the terrible crisis through which they had just passed, and presented themselves again to renew the combat.

It is true, that in spite of their courage, they could not recover

the ground they had lost, but they put a stop to the victorious march of our soldiers. The struggle continued without the balance leaning to one side or the other. General SANTA-ANNA had fallen, with the horse he was mounting, that had been wounded in the head by a grape shot. Time ran on, the number of victims increased, the struggle gave no evidence of ceasing. In addition, suddenly there came up a great storm that deluged both the combatants and compelled them to suspend the strife. This was at 2 o'clock in the afternoon. Both armies improved the time in reorganizing, in order to renew the contest, when a magnificent rainbow, spanning both fields, appeared, as if to invite peace. The downpour having terminated, the combatants remained quiet for some time. Only the battery of sixteen-pounders, situated at *O*, had carried on a duel with the enemy's battery at *L*, but without producing any notable results.

An incident then occurred which should be related here. From one of the ravines hard by, a man on horseback dressed as a peasant, went out, running, taking the direction of the enemy's battery. Every one believed he was a scout of the enemy who was endeavoring to take refuge in their lines or that he was carrying some information. But the man when he found himself among the guns of the enemy, uncoiled his lariat, launched it, and not catching anything, turned his horse upon his haunches and escaped under a shower of balls which fortunately did not touch him. As this deed was done just as a body of cavalry which came out from a ravine appeared upon the road, the enemy crowned the heights which were in rear of the battery with a multitude of riflemen. Our troops, full of admiration for the daring of the fearless soldier, who returned on a run to our lines, could not take their eyes off him. He was an old time insurgent named VILLAREAL, who was then serving in the artillery in the capacity of chief of caissons with the rank of second sergeant. He had endeavored, he said, to bring in a Yankee at the end of his lasso, for he could not remain idle. We were filled with admiration at such a display of gallantry, of which I have seen no mention in any official document or even in the newspapers. No one pronounces the name of poor VILLAREAL, who died afterwards in obscurity and poverty. An actual witness of the deed, I wish to pay homage in my diary to a deed so meritorious, to let every one know the man and his distinguished action. In this unhappy strife there were many other honorable deeds that have not been told.

The Americans having reorganized, threw themselves vigorously upon our lines, but were forced to retire leaving in the hands of our soldiers two guns, six-pounders, and three flags. One of these

flags was sent by General SANTA-ANNA to the legislature of the State of San Luis Potosi. In this combat, Colonel D. JOSE MARIA CANASCO conducted himself gallantly. Finding himself deprived of the command of the Second Light Battalion in consequence of the affair at Monterey, he went with the army, accepting an insignificant commission. But the temporary commander of the battalion, DON JULIAN DE LOS RIOS, having been wounded, CANASCO took the flag and placing himself at the head of the battalion threw himself upon the enemy, obliging him to retire. The Colonel was mounted upon a large, fat horse, which made him very conspicuous.

The cuirassiers who were looking for a pass through which to rejoin our lines, entered the cañon *P* with the idea of coming out through the narrow pass at *Q*. At such a distance they could not be well distinguished, and they were supposed to be a force of the enemy coming to attack us in flank. They might well have been taken for Americans, for their uniform was blue, and they had neither helmets nor breast plates. This caused not a little alarm on the extreme left of the line, which could not count upon more force than a small battalion of two hundred men that served as support to the batteries. Some one pointed out to Colonel D. CORONA, commandant of artillery, that it would be opportune to change front to the left some pieces of the battery at *O*, and also to change some iron twenty-four pounders at *R*, which had just been put in field earth-works in order to get a cross fire upon the exit *Q*.

The Colonel at first declined to do anything without an order from General SANTA-ANNA, but seeing the emergency, decided to order the maneuver, which was executed. General SANTA-ANNA who had also observed the movement of the cuirassiers, sent speedily his adjutant, General D. DIEGO AGUELLES, with an order to the battalion that supported the left batteries, to immediately occupy the mouth of the defile at the place it had been stationed the day before. During these movements the head of the cuirassiers appeared in the defile, but two shots from the twenty-four-pounders bounding towards them, warned them that it was not prudent to move forward. An officer detaching himself, rode forward to explain matters, and then the cuirassiers joined our lines.

Lieutenant-Colonel D. JOSÉ MARIA CASTRO, known as the "bearded," dressed in uniform "de riguer," as he always was in war, was ready to take up his march to the defile *O*, when the arrival of the cuirassiers suspended the march. The alarm which the appearance of this small force in the defile *O* caused our troops, can give an idea of the effect which would have been produced by a

formal attack on the part of the enemy. Reciprocally the effect would have been the same upon the enemy had our troops defiled from the cañon *P* during the heat of the battle. This was the last incident of the battle of the 23d.

The Americans deployed their lines between the points *SS*, and our first lines were formed at *TT*. The battle had completely ceased. Now and then shots fired between men engaged in individual combat could be heard. Our troops were squatting down close to the ground, holding their guns vertically, with the butts resting on the ground, retaining the last position they had conquered. The appearance of the troops was flattering, in spite of the fact that they had not had food all day. They appeared happy and contented for having overcome thus far the obstinate resistance of the Americans.

It was believed that there was nothing more to do but to work during the night to extend our line towards the right, and to plant a battery upon the heights *W*, in order on the following day to enfilade the enemy's lines. It appears to me it would not have been very difficult to conduct as far as *W* the battery of eight pounders, replacing this with the twelve-pounders and the seven-inch mortars, so that we would have had in line on the following day fourteen pieces, whereas on the 23d we had only nine. The battery of sixteen-pounders would have remained at *O*, and that of the twenty-four pounders, which had just been mounted and placed in position on our left flank upon the road, united, these six pieces of large caliber would have produced good effects upon the right of the enemy's lines. There only remained then to get all our pieces in action, and concentrate their fire upon the lines *SS*, as is indicated upon the map. Taking into consideration the losses the Americans had suffered, and the state of demoralization in which they found themselves, it is credible that on the following day our army would have consummated its overthrow. These were the hopes of the army so discussed by many officers; but misfortune pursued us, and ordered otherwise.

At sundown an order was communicated to our lines, which caused dispositions for retiring to be made. This disposition caused general and profound disgust among the troops; they saw with grief that they were going to lose the benefit of all the sacrifices that they had made; that the conquered field would be abandoned, and that the victory would be given to the enemy; and finally, to affirm the idea already general in the army—that it was impossible to conquer the Americans. The reasons that were given for the

retreat were as follows: There was nothing with which to feed the troops; that the army found itself very much fatigued, and could not have fought the next day; that had it remained all night on the field of battle, it is possible that many of the organizations would have disbanded. These reasons were specious in the extreme. If there was not food for the troops at the place occupied, there was just as little at Aguanueva, where they remained for several days in camp after the retreat. Moreover, on the night of the 23d it happened that some of the troops who had prepared food did not have time to issue it on account of the retreat, emptying the food upon the ground in order to load their kettles upon the mules. The exercise of a little foresight would have caused cattle to have been killed and roast beef issued during the night upon the field of battle. For many days the army was fatigued, and for this reason needed rest all the more in place of marching fifteen miles to Aguanueva, where it would have to give battle, provided the enemy should pursue vigorously. The same fatigued condition of the army should have shown that the troops would not have disbanded, since they were all too tired, and thought only of resting. Moreover, the troops, seeing victory ahead of them, were enthusiastic, and under these circumstances would never have abandoned their colors. Likewise they knew that the enemy had in Saltillo storehouses filled with provisions, clothing, and even money; on the other hand the rear guard of our army had only an uninhabitable desert to march over on their return. The troops received with much disgust the order to retreat.

Shortly after night fell, taking advantage of the dim light of the new moon, the troops descended from the heights which they had conquered with so much sacrifice, and formed in column upon the road. Fortunately the enemy did not divine our movement, for a vigorous attack under these circumstances would certainly have produced a disaster. At first the march went on in an orderly manner, but the disgust that the troops experienced, and the desire of each individual to get to the point of rest as soon as possible, caused each one to march as he pleased, mixing up the soldiers of one battalion with another, causing in this way the utmost confusion. The confusion was of course necessarily augmented by the darkness of the night. As the army got nearer its destination, it was guided by the light made by the burning of the Hacienda de Aguanueva, which assumed large proportions. Everyone dropped down where he found himself and went to sleep, and only the artillery, which went into park on the right of the road, remained united. During the same

night, General SANTA-ANNA held a council of war, composed of the general officers and the generals of artillery and engineers. The council decided, reducing its conclusions to writing, that the retreat was absolutely necessary.

Feb. 24th.—The morning of this day was employed in getting the soldiers into their own battalions. At about 10 o'clock in the morning a staff officer of General TAYLOR's arrived with a flag of truce; he proposed to deliver up our wounded left on the field of battle and to exchange prisoners. I believe that the true object in sending him was to investigate the *moral* of the General-in-Chief and the condition of the army. General SANTA-ANNA ordered the bandage which covered his eyes removed so that he could see perfectly that order was reëstablished in our camp, which presented in every respect an imposing appearance. Already from the quietness of the camp one could appreciate the losses we had sustained. In all there were 3,494 killed, wounded or missing; that is to say, more than a quarter of the force. In detail as follows:

Killed	591
Wounded	1,037
Bruised	12
Missing	1,854
Total	3,494

Of the killed were:

Chiefs and officers.....	23
Troops	568
Total.....	591

Wounded:

Generals.....	2
Chiefs and officers	101
Troops	934
Total.....	1,037

Missing:

Chiefs	1
Officers	6
Troops	1,847
Total	1,854

Bruised:

Chiefs.....	3
Officers	2
Troops	7
Total	12

This shows a loss of one officer to every twelve men.

Munitions of war used up:

Cannon balls	571
Rifle cartridges.....	555,000

Of the officers who set out the latter part of the previous year (1846) from the military college, D. AGUSTIN LINDEN and Sub-Lieutenant D. JUAN B. NAVARRO and D. JOSE PICHARDO, were killed.

In our casualties appeared 1,852 dispersed. These consisted of recruits, who commenced to disperse from the beginning of the battle, who, on account of a lack of foresight in not providing the proper means of bringing them back when it happened, did not return. Our opponents suffered no inconvenience from dispersions, partly because their troops were better disciplined than ours, and partly because fighting in a foreign country, the instincts of self-preservation caused them to remain united. And, besides, General MIÑON, with his cavalry, was believed to be in rear of the American army, and those desiring to leave would have fallen into his hands. It is no easy matter to estimate the losses of the enemy, they having remained masters of the field, but it is rational to believe that they were not greater than ours—they should even have been less. My reasons are as follows: The attacking party generally suffers greater loss than those who defend a position, but there is a compensation where the defenders turn their backs, for then their adversaries take advantage of this turn of affairs to revenge themselves. During the day of the 23d not once, but several times, did we see the Americans obliged to retire in disorder. Upon the field occupied by our troops could be seen as many dead Americans as Mexicans.

The caliber of our guns being greater than those of the enemy, the wounds given were of the gravest character. As an offset to this, the three buckshot which accompanied the bullets of the enemy produced the greater number of wounds. In consequence, it is logical to conclude that we should have had the greatest number wounded and the enemy the greatest number killed.

Although it may be urged that the Americans, in general, shot better than our soldiers—a circumstance which is without doubt most essential in a contest between riflemen, still much of its importance is lost in attacks in line, where the soldiers, blinded by the smoke and filled with excitement by the struggle, do not aim properly—therefore the losses of the enemy should have equaled ours, but they ought to have had a greater number of killed.

The appearance of the encampment at Aguanueva was tranquil; the fatigue undergone during the preceding days caused the troops to remain quiet—only the necessity for hunting food caused them to run about from one place to another. Two officers partook of a cake of chocolate, without any other accompaniment; four others

were eating together a small plate of rice, without bread or anything else.

In the wood near the Arroya were camped the carts which hauled the wounded. These unhappy ones, whom none heeded, clamored with pitiful accents that aid be given them. Those who had died the night before were thrown out of the carts and were covered with their mantles, and appeared to be sleeping.

But from that pitiful picture, the sight turned to the Hacienda and contemplated other spectacles more harrowing. In the principal house, the roof of which had been consumed by the flames, was established the field hospital. There the wounded, without distinction of rank, lay upon the floor in such great numbers that one could not walk about among them. There also went on amputations and the most cruel operations, in plain sight of the other unhappy patients. In a contiguous chamber, also unroofed, could be seen legs and arms of no further use to their owners. Outside this bloody precinct, the dead animals left by the enemy, and the carcasses of steers slaughtered to feed our troops, completed this horrible spectacle, making an indelible impression upon the strongest minds.

Feb. 25th.—Continued in camp. The bad food of the troops, little or no shelter in a season of the year so raw in that region, caused in the army an epidemic of dysentery and diarrhœa, which afflicted the greater part of the men.

Feb. 26th.—During the retreat from Angostura the enemy did not come out from his position to harass us, even the shortest distance. This proves conclusively how much he suffered in the battle. At two o'clock in the afternoon we commenced to break camp. The first to march were the wounded; but the few carts would not hold them all, so that hand litters had to be improvised by using four guns and covering the square thus formed by mantas or blankets. In each one of these hammocks, carried by four soldiers, was a wounded man. In this manner they managed to make forty-two miles through the desert without meeting any water. The soldiers weakened by hunger, many of them sick, worn out by fatigue, filled with discouragement, threw upon the ground the burdens they were carrying so wearily, and others deserted, being no longer able to endure their afflictions. On this account the road was lined with stragglers, wounded men and even the dead. Following the file of litters came the wagons and ox carts that had been seized, making a creaking noise with their enormous wheels. The night came soon. A cold wind blew the dust made by the marching troops through

the column. The pallid moon crazily chasing through the clouds, hardly shone bright enough to light up this sombre and distressing scene. In contrast to this was the woods of burning palms which covered the whole plain, and which had burned without cessation since the 21st. Soon the rear guard overtaking and passing the convoy of the wounded, produced confusion, and the moon hiding itself at this same moment added to the disorder, the poor wounded men in consequence being the victims of a thousand acts of inhumanity. Finally, at one o'clock in the morning, the advanced guard of the army arrived at Encarnacion, and just as had happened at Aguanueva, every one threw himself down wherever he could. The appellation of "*La Noche triste*," might with all justice be also applied to this night.*

March 12th.—To-day the army entered San Luis Potosi, after an absence of forty-four days from the time the first troops set out.

OBSERVATIONS.

I have no reliable data concerning the loss suffered by the army in its disastrous retreat across the desert, but I believe, without exaggeration, that it was 3,000 men, most of whom were deserters.

Two causes, to my mind, operated toward the unfortunate ending of this expedition, the first being the fact that necessary provisions were not carried. Since the fact of the character of the country to be passed over was known, this should have influenced the authorities to have done so. Second, the lack on the day of the battle of the necessary light artillery, which could have maneuvered upon the left flank and upon the rear of the enemy when it was enveloped. These errors committed by General SANTA-ANNA were dearly paid for in the loss of the battle.

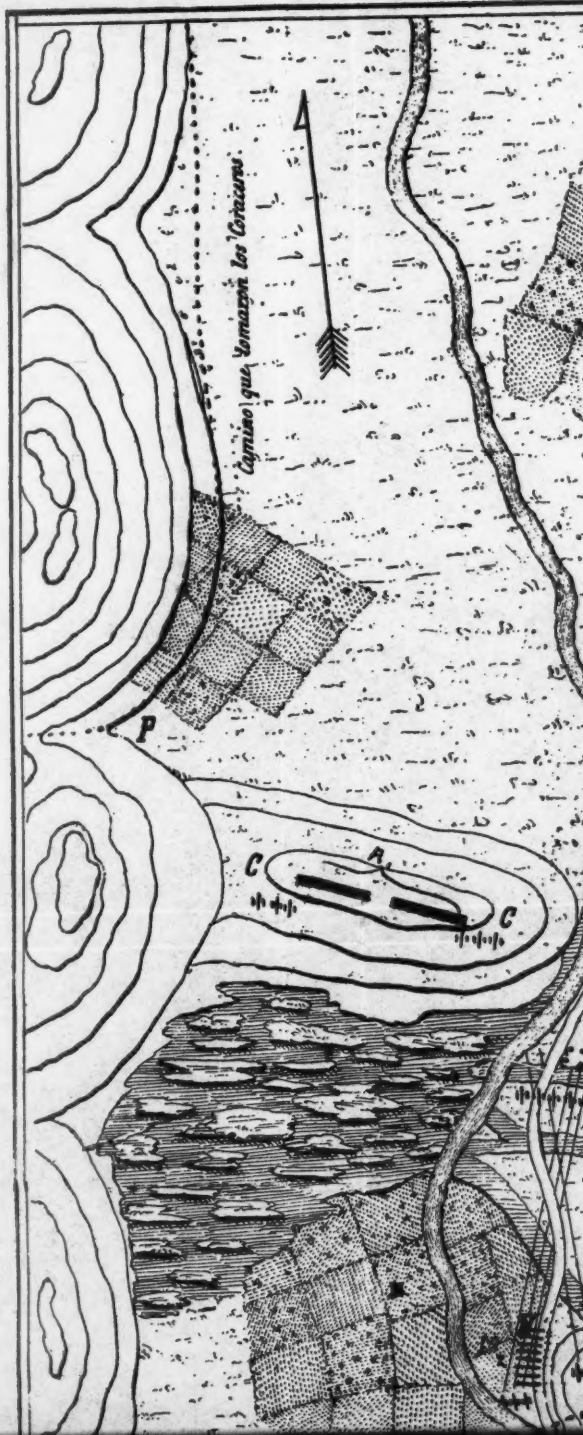
With regards to the retreat on the night of the 23d of February, I have already said enough, both pro and con. The General-in-Chief has tried to exculpate himself by placing the blame upon the weariness of the troops, the lack of food, and the fear of disbandment. In the course of my remarks I have endeavored to show the fallacy of these assertions; maybe other reasons more powerfully weighed upon General SANTA-ANNA. Alarmed at the great losses suffered by the army on the day of the 23d, and particularly by the dispersion which took place in some of the bodies, he doubted the result of a new battle on the next day, and taking into consid-

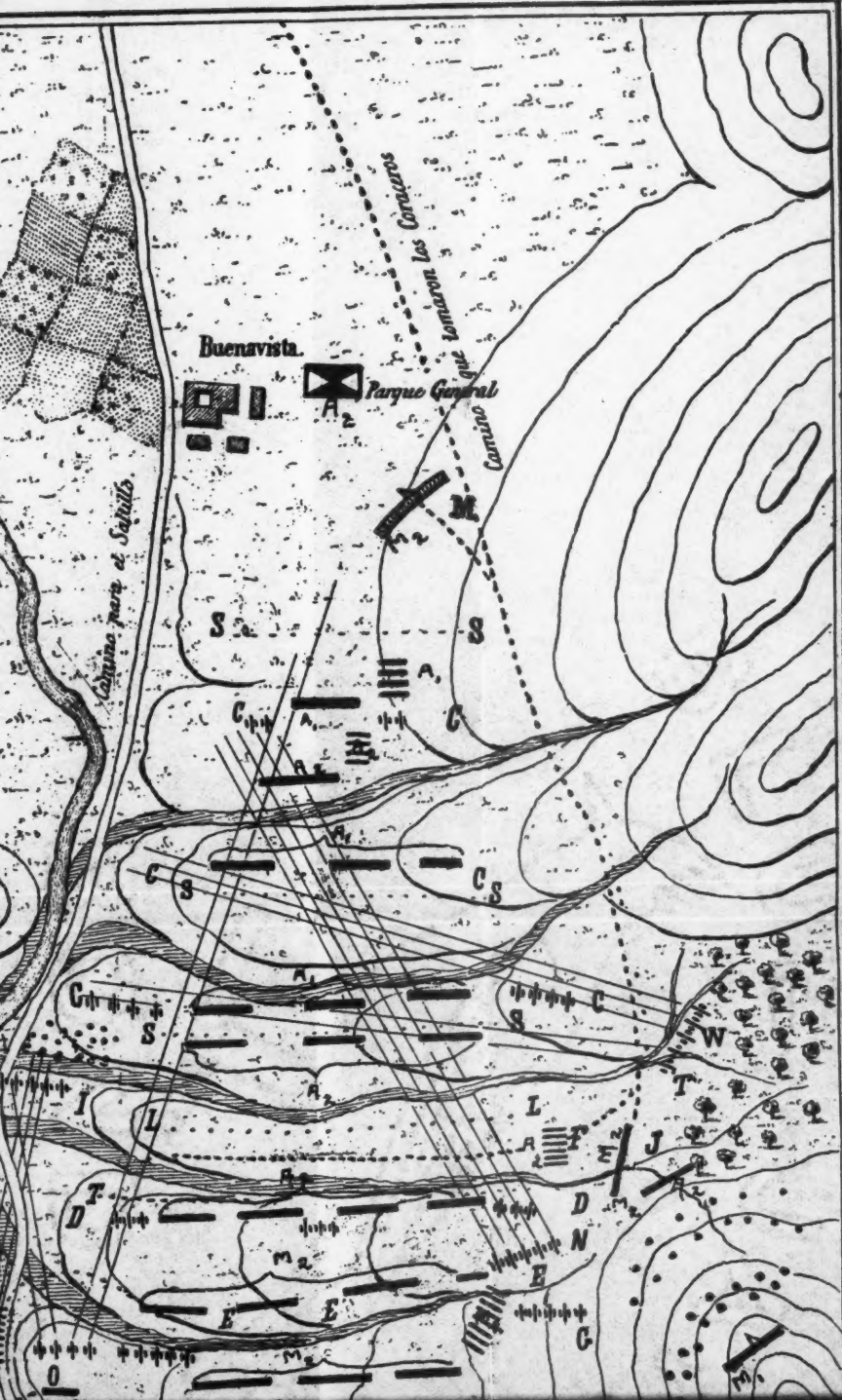
* NOTE BY TRANSLATOR.—From February 27th to March 12th, being simply an account of daily marches without interest, the translator has not written that part of the diary, but will close with the return of the army to San Luis Potosi on March 12th, and followed by a few observations of the author on the conduct of the expedition.

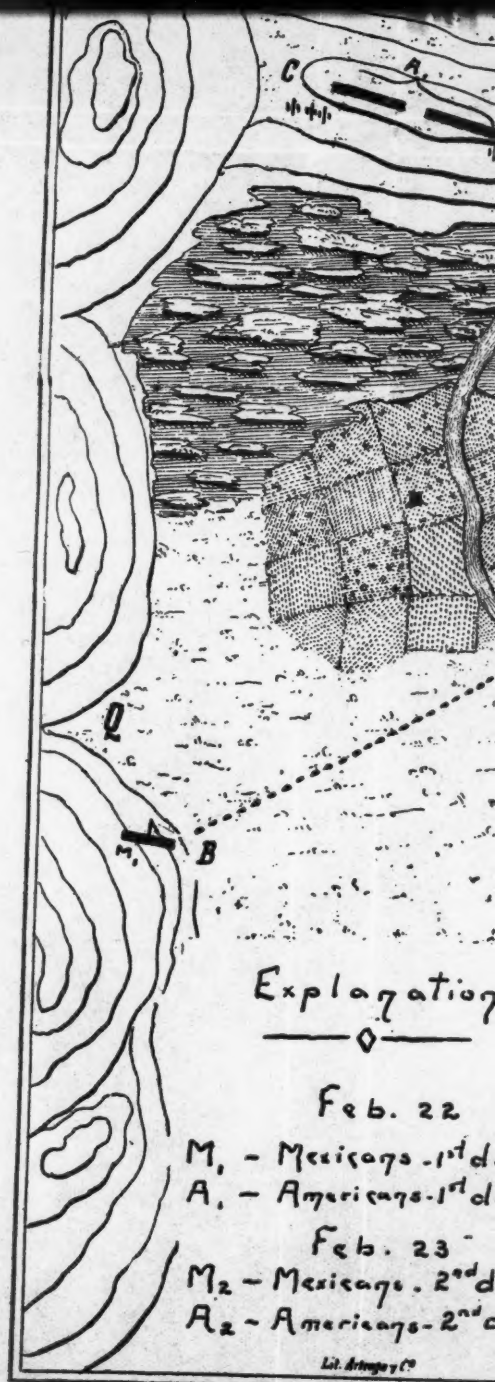
eration that the Republic had no other army with which to oppose the invader, who had already another army forming in the East, SANTA-ANNA feared that if in a new battle he was overthrown, the Americans would penetrate into the very heart of the country, without encountering any resistance.

Without doubt, considering the great responsibility which rested upon General SANTA-ANNA, the reasons given above ought to have much weight, and I believe that history should take the same into account when judging this affair. But how painful the thought that the efforts and great sacrifices that the nation and the army had made, should have remained without some fruit, even if they did not destroy the army of General TAYLOR.

If the army had succeeded in conquering the Americans, General SANTA-ANNA would have been to the Republic what he was in 1829, but the retreat from Angostura dug his political grave.







Map of the

THE MATABELE WAR.

MR. F. C. SELOUS'S NARRATIVE.

[FROM THE LONDON "TIMES," OF TUESDAY, FEBRUARY 6, 1894.]

THE Union Royal mail steamer "Spartan," from the Cape, anchored in Plymouth Sound at 9 o'clock on Sunday evening. Among the passengers was Mr. F. C. SELOUS, the famous explorer and hunter, who returned to South Africa a few months ago, at the beginning of the troubles with LOBENGULA, after only a short stay in England. Mr. SELOUS handed to REUTER'S representative the following account of the FORBES and WILSON expeditions, which he had written during the voyage home:

FLIGHT OF LOBENGULA.

On December 3d Major FORBES, following on the tracks of LOBENGULA'S wagons, reached the Tchanganí River, and found the King had only crossed to the northern bank that same day. This fact was very evident from the freshness of the wheel marks in the muddy ground and the condition of the fires which were still burning in the camp which LOBENGULA had just vacated. In this camp a halt had been made of some days' duration, as a large, well-built, rain-proof hut had been built for the King's accommodation.

Messrs. BURNUM and INGRAM, scouting on ahead of Major FORBES'S column, here captured a Matabele lad who was lying asleep in one of the huts within the deserted camp. From this boy, who gave himself out to be a son of MAKWAZKWI, the head induna of Buluwayo, it was gathered that LOBENGULA had only got his wagons across the river a few hours before Major FORBES arrived upon the scene, and had once more fled northwards on hearing of the near approach of the white men.

By this time all the horses at Major FORBES'S disposal, owing to their having already been many days without corn, doing hard work

on young green grass, and at the same time being exposed night after night to heavy rains without any kind of shelter or even a blanket, had got into a very low, weak condition, so that there were but few amongst them that were fit for a hard day's work. And if the horses had had a bad time of it owing to poor feeding and exposure to constant rain, it may be judged that their riders (as fine a lot of young Britons as England, Scotland, Ireland and South Africa could produce) had already endured great hardships and privations.

MAJOR WILSON IN PURSUIT.

Late on the afternoon of the day of his arrival at the Tchangani, Major FORBES sent a patrol across the river with instructions to follow the King's wagon tracks in order to see in what direction he was going, and also to endeavor to capture a Matabele prisoner and find out from him the exact whereabouts of the King and the number of men who were with him. This patrol was expected by Major FORBES to return to the main column before dark.

There was still about an hour's sun when Major WILSON, with a picked body of fifteen men, crossed the river they were destined never to see again. Amongst these men were the two American scouts, BURNUM and INGRAM, who throughout the campaign have rendered most valuable services to the expedition, and eight of Major WILSON's officers; in fact, these fifteen men were the flower of the Victoria column. Just before crossing the ford Major WILSON sent Captain BOWEN, one of his most trusted officers and intimate friends, back again with a message to Major FORBES telling him not to follow after him, as he was not going far and would be back by sundown. Even at this time the thought must have flashed across this brave man's mind that desperate work might be before him, and Captain BOWEN's young wife will ever bless his memory for the kindly thought that prompted him to think of her in this moment of excitement, and find an excuse to send her husband back to the main column.

After crossing the river, and as it was already getting late, Major WILSON pushed along the fresh wagon track as fast as his tired horses would allow him to go, and just at dusk came up to a large encampment of natives on the right hand side of the track. On approaching this encampment, BURNUM galloped up to it and found it to be full of Matabele men, women and children. Most of these, although the men were all armed with guns, burst through the fence and bolted into the fast darkening forest behind them on seeing the approach of the white men. BURNUM, however, stopped one man, who, on being questioned by Captain NAPIER, the interpreter, said

that the King had only passed the spot late in the afternoon, and affirmed that at the present moment he was camped a very short distance ahead. He was then told to take the white men to the King, which he expressed himself quite willing to do, and at once ran forward along the wagon spoor at a pace that required the horses to canter to keep up with him.

Very soon another large encampment was reached; here also the men were all armed, but had their women and children with them. Like the first lot encountered, they, however, made no attempt to oppose the advance of the white men, but retreated into the bush. At their approach here the man taken prisoner at the first encampment gave his captors the slip, but another was secured to take his place, who upheld the story told by the first, and said that the King was quite close.

Once more, guided by his second captive, Major WILSON's little band rode forward into the fast gathering gloom of approaching night, deceived, I think, by the demeanor of the natives into the idea that LOBENGULA would be willing to surrender without fighting if taken by surprise. After this they passed several more large Matabele encampments—seven in all—all full of men, women and children. By this time it had grown quite dark, and they were riding up an open valley skirted on each side by thick forest. Just within the bush at the head of this open valley they could see fires burning, and, pointing to these, their last-captured guide said, "Nansia Sihongno inkose" ("There's the King's encampment; he is there with his wagons").

LOBENGULA SUMMONED TO SURRENDER.

Major WILSON and his men forthwith cantered up, and presently, by the light of a fire, found themselves in close proximity to an encampment surrounded by a high fence. Within this enclosure stood the King's wagons, and in one of these lay LOBENGULA himself, though of this Major WILSON and his men were not absolutely certain at the time. Nor could they see in the darkness the white tent of the wagon, which was, however, plainly seen showing above the fence on the following morning.

Ranging his men up within a short distance of this high fence, Major WILSON bade his interpreter call upon the King to surrender, at the same time promising him fair treatment. To this exhortation no answer was returned, but a considerable rustling and movement could be heard within the enclosure, which was, indeed, full of armed

men, who did not know exactly how to act, as they were ignorant of the number of the whites, whose forms were but dimly discernible in the darkness. The interpreter then again called out, "We do not want to fight any more or kill more of your people. Enough blood has already been shed. Let your King come out and talk to us, and hear the words we bring from the chief of the white men." To this again there was no answer, but it was now seen that men were constantly rushing into the enclosure from the outside darkness, warriors, probably from the encampments, rapidly passed before the King's wagons were reached. There was a horse tied up outside the fence, and, whilst waiting for an answer, one of WILSON's men, named ROBERTSON, dismounted, and was advancing to secure it, when the sound of further movement within the enclosure and the ominous clicking of gun-locks made Major WILSON think that the Matabele were about to make a rush and endeavor to surround them in the darkness, so he at once called to ROBERTSON to come back, and, as soon as he had mounted, quietly withdrew with all his men from the immediate neighborhood of the King's wagons.

Shortly afterwards a very heavy storm of rain broke over them, and the night became intensely dark. Soon after Major WILSON had retired, LOBENGULA mounted a horse and, accompanied by MAK-WAZKWI, the head induna of Buluwayo, and three other men, all of whom were also mounted, rode away northwards, leaving word that his people were to burn his wagons, and then, after stopping the advance of the white men, were to follow him with the women and children and cattle. This at least I heard from his brother INYANDA, and it is probably more or less true, though not perhaps correct in every detail.

Now, Major WILSON had left two of his men at a point on the wagon track before it got dark for some reason which I do not quite call to mind, and he was much concerned about the safety of these men, and some time was spent in trying to get back to them, Major WILSON, himself, and BURNUM, the American scout, going down on their knees and feeling with their hands for the spurs of their horses. At last they were obliged to shout for them and run the risk of letting the Kaffirs know their whereabouts. Their shouts were answered and the missing men recovered.

MESSAGE TO MAJOR FORBES.

Shortly after this, the night being still young, Major WILSON determined to send Captain NAPIER and another back to Major FORBES,

telling him that he believed he was close up to the King and hoped to capture him on the following morning. No direct message was, I believe, sent to Major FORBES for reinforcements, but when that officer asked Captain NAPIER what he thought Major WILSON wanted him to do, Captain NAPIER replied that Major WILSON wished him to join him before daylight with his whole force and two Maxim guns. But at this time Major FORBES knew that a Matabele impi was in the bush in his immediate vicinity, whilst at the same time the river was rising fast. After a consultation with Commandant RAAF, a most experienced man in native warfare, and one who has the reputation of being personally very daring and at the same time cautious where the lives of his men are at stake, it was decided that it would be madness to attempt to cross the rapidly-rising river in the darkness with the Maxim guns, as the noise that would necessarily be made in effecting such an operation would be sure to attract the attention of the enemy and might provoke an assault in overwhelming numbers under cover of the darkness.

REINFORCEMENTS SENT.

Under these circumstances Captain HENRY BORROW, with twenty men of the Salisbury column, was sent to Major WILSON's assistance, leaving it open to that officer to either attempt the capture of the King with thirty-five men or to retire upon the main column if he thought there was likely to be a determined resistance. Unfortunately WILSON and BORROW and the gallant little band of men under their command, not knowing the terrible odds they would have to encounter, decided to attempt the King's capture forthwith rather than fall back on the main column without striking a blow.

All through the long hours of this dark, rainy night Major WILSON and the twelve brave men who were with him (two having left to carry the message to Major FORBES in the early hours of the night) stood patiently beside their horses, from whose backs the saddles were never removed, as it was evident from occasional shoutings that were heard that the Kaffirs were moving about, and a surprise had to be guarded against. At last, just as day was about to break, the beat of horses' hoofs on the sandy ground was heard, and soon afterwards Captain BORROW and his men rode up.

ANOTHER SUMMONS TO LOBENGULA.

After a short consultation it was determined to make a dash for the King's encampment at once, and to endeavor to capture his

wagons, in one of which it was hoped he would still be found. As the spot where Major WILSON and his men had passed the night was but a short distance from the King's encampment, it was still barely daylight when the thirty-five mounted white men rode up to it on the morning of December 4th. As on the previous evening one of Major WILSON's men, who spoke the Sintabele dialect, called upon the King to surrender. This call met with an immediate response, though not a verbal one, for scarcely had the interpreter ceased speaking when a body of men, estimated at about 100 strong, poured out of the enclosure, and lying out in skirmishing order in the bush to the right of where the white men were standing, at once opened fire upon them at a distance of less than 100 yards. It was so early that the flashes of flame could be seen issuing from the muzzles of the rifles. The white men at once dismounted and returned the fire, when it was perceived that another body of natives were working round in the bush to their left. Seeing this attempt to outflank and surround his little party, Major WILSON ordered his men to remount and retire down the open valley behind them. At this time two horses had been shot, but no white man had been hit. The two men who had lost their horses were taken up behind two of their companions, and the whole party retreated at a hard gallop down the open valley, taking up a position behind an immense ant heap at a distance of about 600 yards from the King's encampment. They were followed by the body of Matabele, who had first fired on them, and these men charged out boldly into the open, running down the open valley to within 200 yards of where the white men had taken up their position. Then, however, finding themselves exposed to a heavy fire from behind the ant heap they swerved off into the bush skirting the valley, from which they kept up a continuous fire.

Very soon the second body of natives, who had been running in the shelter of the bush skirting the left-hand side of the valley, again outflanked the white men and opened fire upon them. Here two more horses were shot, but again no white man was wounded. Once more Major WILSON and his men retreated down the valley, hotly pursued by the Matabele, who, however, kept within the shelter of the bush on either side of the open valley. This time four men had to be carried on tired horses behind the saddles of their companions.

ANOTHER MESSAGE TO MAJOR FORBES.

After retreating this second time for a short distance, the white men dismounted, and once more stood at bay. Major WILSON then

called up BURNUM, the American scout, and GOODING, and asked them if they thought they could ride through to Major FORBES and ask for reinforcements. "We will try, Major," answered BURNUM, "but should like FRED INGRAM to go with us," INGRAM being BURNUM'S great chum and fellow American scout. The three messengers at once galloped off, taking the King's wagon track, along which they had come the previous day, from the Tchangani River.

All this time the Kaffirs were keeping up a hot fire from both sides of the valley, which the white men were answering steadily. That Major WILSON thought his position a desperate one even at this time may be gathered from the fact that the last words GOODING heard him say were: "Keep your hearts up, boys; we'll fight our way out of this yet."

BURNUM, INGRAM, and GOODING, after leaving their comrades, at first rode down the valley to get clear of the Kaffirs in the bush to their right, and then made for the King's wagon track, which they were just approaching when they met a large body of Matabele coming up from the direction of the river. These men opened a heavy fire upon them, but as their horses were moving rapidly, no damage was done, and the three white men outflanked and passed them. They had only just got clear of this first body of Matabele when they came on a second, much larger, force advancing rapidly through the bush, and evidently bent upon taking part in the attack on Major WILSON'S party. When these men saw the three white men, they charged forward, thinking they would be able to surround them in the bush, every savage warrior humming out the word "Jee-ee," and producing altogether a volume of sound calculated to make the stoutest heart beat fast. It was with the greatest difficulty, BURNUM told me, that he and his companions managed with their tired horses to outflank these swift-footed savages thirsting for their blood, but at length they got clear of them, and eventually made their way down to the Tchangani River, which they struck at a point a considerable distance below the wagon ford. At about 8 o'clock they reached Major FORBES'S column. During the night and morning the river had been rising rapidly, and in recrossing their horses had to swim.

BURNUM, INGRAM, and GOODING were the last men that saw poor WILSON and BORROW and their men alive, and we only know what happened subsequently from native report. I well remember when INGRAM was asked by Dr. JAMESON if it was not possible that Major WILSON and his men might have outflanked the Kaffirs to his left

and retreated down the Tchanganí River, the American scout replied, "I guess not, doctor, four of the men were dismounted, and the horses of many others were completely done. Some of those with the best horses might certainly have got away, but they were not the class of men to leave their chums. No, Doctor, I guess they fought it out right there where they stood."

THE LAST STAND.

We now know approximately what happened. The two Matabele regiments met by BURNUM and his comrades on their way to the river closed up in the rear of Major WILSON's party, and the little band of white men were soon exposed to a very heavy rifle fire from every side, for it may interest Mr. HENRY LABOUCHERE to know that the Matabele, far from being savages, only armed with spears, as he had asserted, were at the commencement of the war possessed of from 1,200 to 1,500 Martini-Henry rifles in perfect working order, and over 100,000 rounds of ammunition, and of these rifles probably 800 or 900 were in the possession of the regiments that accompanied the King in his fight towards the Zambesi.

For some time the white men, who were most of them very good shots, kept their assailants at bay. One by one, however, horses and men fell dead and wounded, the survivors taking shelter and always keeping up a hot fire from behind the dead horses. At length, encouraged by their indunas, the Matabele, with loud shouts of "Ingena go imcounto" ("get at them with the assegai,") "Gwaza Mashlauza" ("stab them at close quarters,") rushed in in overwhelming numbers, and, as the American scout INGRAM thought they would do, the little band of Britons "fought it out right there." Even at the supreme moment when the savage warriors were fast closing upon them no man thought of mounting one of the still unwounded horses and trying to escape up the open valley towards the King's encampment. Like the Scots at Flodden Field, they stood to the last "in desperate ring" round their dead and dying comrades. One last deadly volley they poured into the mass of their assailants at close quarters, and then drawing revolvers and clubbing rifles, died fighting to the bitter end.

Had Major WILSON given the order for a general *saue qui peut* soon after the departure of the three scouts, it is certain that some of the best mounted men of his party would have escaped. But at that time four men were already horseless and the horses of others were knocked up, and no man there dreamt of deserting his com-

rades and saving himself. They were not men of that class, and so shoulder to shoulder they stood and died together. Mashonaland has lost some of her best and bravest colonists, amongst them men like ALAN WILSON and HENRY BORROW, whose places no man can ever quite fill. Many a home, too, in England, Scotland, Ireland and South Africa has been rendered desolate by the death of these brave men.

ENGLISH OPINION.

In Mashonaland, however, and, I think I may say, throughout South Africa, the heart of every British-born man will swell with pride when he remembers how nobly his countrymen stood by one another; how well they fought against desperate odds, and how nobly they died in the forest beyond the Tchangani River. I would hope, too, that some sympathy may be felt for their fate in this, their mother country, beyond the immediate circle of their friends, but it is almost too much to hope, I am afraid, in a country where Mr. HENRY LABOUCHERE is allowed to publicly denounce the brave men who have just died so nobly, as well as all other Englishmen in Matabeleland, as murderers, border ruffians, the riff-raff of South Africa, etc., not only without arousing any feeling of indignation, but without eliciting any but the most lukewarm defense in the press in England and Scotland. Captain LENDY, too, has gone to his grave without bringing Mr. LABOUCHERE to account for the calumnies he has published against him. To resume: I regard as entirely apocryphal the account circulated as to Major WILSON's party having at one time dispersed the Matabele, who subsequently returned to the attack with reinforcements, and also the story of the cautious advance of the Matabele after nearly all the white men had been killed, when it is asserted they found the few wounded survivors writing on bits of paper. Nothing is more certain than that the firing was continuous from the time Major WILSON's last messenger left him until the last volley, and the fact that this last volley was a heavy one, showed that when the Matabele made their rush there were still a good number of white men left alive. The end must then have come very quickly. Commandant RAAF told me that he listened most carefully to the firing, which was plainly audible to Major FORBES's party on the south bank of the Tchangani, and that it was all in one spot, after the first shots near the King's wagons. At last there was a heavy volley and then silence. Then three single shots were fired, also in the same spot, after which no more shooting was heard. Other men with Major FORBES said that after the last

volley several scattered shots were heard which sounded farther away than the last volley, and it was on the strength of these scattered shots, which some men are reported as having heard, that hopes were long entertained that at the last some of Major WILSON's party had mounted the best of the surviving horses and made a dash through their assailants. Had any escaped in this way they would have been cut off from the river, and thus unable to rejoin Major FORBES, and it was thought that they would make their way up to the road leading from Matabeleland to Hartley Hills and then make their way to Salisbury. As time passed, however, and no news came from Mashonaland that any members of Major WILSON's party had arrived there, hope gradually died out, and it is now certain that the brave fellows stood by one another to the last and died together.

I have written this account of a very sad incident in the history of the colonization of inner South Africa, because I believe that, based as it is on the narratives of BURNUM, INGRAM and GOODING, the last men who saw Major WILSON and his men alive, it is a pretty correct version of what took place beyond the Tchangani River on the evening and night of the 3d and on the morning of the 4th of December last.

RETREAT OF MAJOR FORBES.

Of the simultaneous attack on Major FORBES's column, and of his subsequent retreat along the southern bank of the Tchangani River to Emhlangen, as well as of the dangers and hardships endured during the retreat by himself and his men, I will not attempt to give any account, because the story will be better told either by Major FORBES himself or by one of the men who were with him. In reply to the question: Why did not Major FORBES go to WILSON's assistance on the morning of December 4th? I will only say that at daylight on the morning of that day Major FORBES broke up his camp and was advancing towards the ford with that object when he was attacked by the Matabele, who for two hours kept up a heavy fire upon his party, killing and wounding eighteen horses and wounding four men. By the time that the enemy's fire was silenced, the river, which had been steadily rising, had filled from bank to bank, and was quite impassable with the Maxim guns. The river remained in heavy flood for three days, and so far from it having been the flooded condition of the river which prevented Major WILSON and his men from rejoining Major FORBES, and so caused the disaster, it is probably the depth of water in the river which prevented the Matabele, after having annihilated the small advance

party of thirty-two men, from crossing to the southern side, and elated as they were with success, overwhelming Major FORBES's entire force of 130 men.

* * * * *

THE SHOOTING OF THE MATABELE ENVOYS.

He then went at great length into the question of the shooting of the Matabele envoys at Tati, where he was present when the incident occurred. He said:

A lot of capital has been made by certain individuals out of the shooting of the Indunas, and the incident has been stigmatized as a foul and treacherous murder, and as a blot upon the escutcheon of England. I was at Colonel GOOLD-ADAMS's camp when the affair happened, and I know exactly what occurred. Late in the afternoon of the day in question, when standing at the door of one of the houses belonging to the Tati Concession Company, I saw my old friend Mr. JAMES DAWSON ride up, accompanied by three mounted Matabele. Colonel GOOLD-ADAMS was not far away, and he also saw the arrival of the men. As I had sent a letter to DAWSON only a few days before, urging him to try to get out of the country with FAIRBAIRN and USHER, and as he looked very much fatigued, my impression first was that he had made his escape, and that the three men with him were Matabele who had seceded from the King. One of these men — namely, INGUBUNGUBO, the King's brother — I knew well, and went up and shook hands with him, but my only thought at the moment was to minister to the personal wants of my friend DAWSON, and I urged the latter to come into the concession and get a cup of tea. Thus I am to a certain extent responsible for DAWSON not having immediately reported the arrival of himself and the Matabele embassy to Colonel GOOLD-ADAMS.

Whilst I was absent with DAWSON, the Colonel, seeing three Matabele all armed with rifles, looking curiously at the British camp, which was situated opposite the concession station and on the other side of the Tati River, sent Mr. TAYLOR, of the Tati Concession, who speaks the Matabele language fluently, to call them to him and ask their business. One of the envoys, MUNTUS, when asked by Mr. TAYLOR what he wanted, assumed a haughty bearing and spitting on the ground, said in a great rage, "What are the white men doing in my King's country?" He then turned to his companions and said, "Hau gubi lapa," meaning "things look nasty," and added, "Where are our horses? They have taken them away."

On this being interpreted, Colonel GOOLD-ADAMS, who it must be remembered, had no conception that the men were envoys from the King, thinking that if they were not watched they would very likely make a bolt back to Matabeleland and give notice of the approach of the white men, informed them that they would have to go over to his camp on the other side of the river, at the same time assuring them that they would be well treated, but should they attempt to escape they would be shot. The men made no remonstrance and did not ask to see DAWSON, but at once walked quietly across the river-bed to the camp, escorted by a corporal's guard of half a dozen men. When I came out of the house with DAWSON after an absence of half an hour we heard that the Matabele had been taken over to the camp under guard; DAWSON said he was sorry he had left them, for, as he had told me whilst we were in the house, the natives were envoys from LOBENGULA, and he himself had been sent in charge of them by the King. I said we had better go across at once to the camp and then you can report yourself to Colonel GOOLD-ADAMS. By this time the sun was down, but it was a bright moonlight night. DAWSON and I had just reached the bank of the Tati when we heard a shot from the direction of the camp, and on getting to the British quarters we were told that one of the indunas, after stabbing two men, had been shot in attempting to escape, while another had been stunned by a blow on the head from the butt end of a musket. The latter was still alive, and DAWSON went to see him, but found him to be unconscious. Dr. GARRAWAY was at once sent by Colonel GOOLD-ADAMS to attend to him, but by this time he had expired. What had happened was this: The three envoys were being escorted by the guard, but they were in no way bound and their limbs were unconfined, though of course, their rifles had been taken from them beforehand, and three men of the Bechuanaland Border Police with loaded rifles were walking on either side of them. Suddenly MUNTUS seized the handle of the bayonet hanging by the side of one of the troopers, drew it from its scabbard, and made a rush through the guards, stabbing right and left. Two troopers were stabbed, and MUNTUS had got quite clear of the guard, and was running towards the place where the horses were picketed. He was about twenty-five yards distant when one of the guards fired and hit him, the bullet passing clean through his body and wounding a Bechuana trooper in the foot. The second induna, INGUBU, a cousin of GAMBO's, made a rush to escape at the same time as MUNTUS, and, as he did so, one of the troopers who had been stabbed struck him a heavy blow on the back of the head with his musket. From this wound

he subsequently died. The old induna INGUBUNGUBO, the King's half-brother, was seized round the waist by Sergeant-Major HORE. He at first struggled violently, but finding no harm was intended him sat down and remained perfectly quiet.

On the following morning the induna resumed his journey to Palapwe with Dawson. It is very evident from the above story that, although the death of the two men was a most deplorable accident, it was nevertheless an accidental occurrence for which no one can possibly be held responsible. It is only the persistent malice of certain individuals, as ignorant as they are malicious, that leads them constantly to misrepresent the matter and to brand honorable men as most infamous criminals.

THE CURB BIT.

BY CAPTAIN E. A. GODWIN, EIGHTH CAVALRY.

THE mechanical principle of the curb bit forms the subject of an article by Lieutenant GAYLE, Second Artillery, in the last number of the JOURNAL, in which he takes issue with some of the principles laid down by Major DWYER in his "Seats and Saddles." Doubtless Major DWYER is not precise in the use of mathematical and mechanical terms, but his meaning seems tolerably clear, and his conclusions are believed to be correct, and to be the logical sequences of the discussion. Whatever lack of clearness is noticed, is doubtless due to his having had in mind not only the mechanical action of the bit, but also the degree of pain inflicted by it. By considering these separately we may, perhaps, make the matter somewhat more clear.

In the first place argument as to whether the bit belongs, wholly, to the first or second order of lever is considered to be a waste of time. Since the weight to be raised and the fulcrum are both composed of living tissue, and a lever of either order would exert a pressure at both of these points, it is necessary to determine the degree of pressure at each, and this is to be done by regarding the bit as a lever of the first order acting at the curb, and as one of the second order acting on the bars. This is, in fact, what Lieutenant GAYLE has done in his article (page 42), notwithstanding his statement that "it will thus be seen that the bit cannot be other than a lever of the first order." The pressure exerted on the bars will be greater than that on the curb, and the difference will be equal to the power applied. Lengthening or shortening the branches of the bit will increase or diminish the pressure at *both* of these points, but will not change the difference between them, and this difference will also remain the same for any relation between the upper and lower parts of the branch.

If, for instance, the power applied be ten pounds and the proportion of the upper and lower parts be one to two, then the pressure at the curb will be twenty pounds, and that at the bars will be thirty pounds. In like manner if the same power, ten pounds, be applied, and the proportions be one to ten, the pressure will be respectively one hundred pounds and one hundred and ten pounds, the difference always remaining equal to the power. This would seem to show that the relation between the upper and lower parts should be determined by some other consideration besides pressure. The consideration which will really determine the length of the upper part of the branch will be the place of the curb—it should be of that length which will permit the curb to lie in the chin groove, with the least tendency to mount up out of it, and at the same time will keep the bit from falling through without unduly tightening the curb.

Now considering the mechanical action and the *painful* action together, it seems evident that if the effect of the curb is greater than that on the bars, the motion of the horse will be the same as would have been produced by a lever of the first order, simply; in other words, he will stick out his nose and lean on the hand. This result is described by Major DWYER, when he says that "we obtain the action of a lever of the first order." Lieutenant GAYLE calls this statement "wholly erroneous"; but, except in a strictly technical sense, it does not appear to be so. The effect produced at the curb is in a direction contrary to what we desire; that on the bars is in the desired direction; consequently we seek to reduce the former to its lowest limits, and our experience tells us that this may be done by adjusting and proportioning the curb according to Major DWYER's directions, which Lieutenant GAYLE calls "common-sense statements about the curb," and "an interview with the horse" will not be necessary. It is even conceivable that, with a moderate pull on the reins, such as would commonly be necessary in controlling the horse, the *painful action* at the curb might be reduced to zero.

Lieutenant GAYLE quotes the statement in Ordnance Memoranda No. 29, to the effect that the bits are numbered according to their severity, which is determined by the height of the port, and declares that "comment on such an absurdity is a waste of time." Major DWYER should have credit for his share in this "absurdity," also, for he says on page 176 of "Seats and Saddles," in describing some mouth-pieces there illustrated: "Fig. 13 shows a succession of mouth-pieces of the forms now generally adopted, beginning with the lightest; that is to say, the one whose pressure is almost entirely exercised on the tongue, and proceeding onward with an increase

of port or tongue freedom, to the very sharpest it is advisable, or can ever be necessary, to use, namely, the one in which the height of the port is equal to the width." Since the tongue is less sensitive than the bars, it would follow that the bit which took all pressure from the tongue and put it on the bars, would be the sharpest for a given diameter of mouth-piece, and numbering them according to the height of port does not appear to be more absurd than numbering with regard to any other single dimension, that of the length of the mouth-piece, for instance, which is the present mode of doing it.

As regards the pressure on top of the head, the figures given by Lieutenant GAYLE are doubtless correct, if all the effect of a pull on the reins is transmitted to that point; but such is hardly the case. He is doubtless aware that the present Shoemaker bit is a modification of its first form, which had a hinge at the mouth-piece on each branch, in such manner as to allow free movement of the lower part of the branch, and also that part which carried the curb, but allowed the cheek-piece to remain undisturbed by a pull on the reins. The same effect is claimed for, and appears to be, to a certain extent at least, produced by the large ring into which the cheek-piece is buckled, and the manner of attaching the curb in the present Shoemaker bit; in fact, the removal of pressure from the top of the head was the chief claim made for the Shoemaker bit, and was the chief purpose of its inventor. If any allowance was made for this action in the calculations mentioned, it does not appear, though actual experiment, instead of theoretical calculation, would doubtless show that the pressure is greatly diminished. The Dwyer bit has similar action, but to a much less extent, because the ring is much smaller, and the curb is attached in a different way.

The present writer does not remember to have seen a case of poll evil among cavalry horses for many years, and is inclined to think that it is not often met with among them. If the pressure on top of the head is as great as calculated by Lieutenant GAYLE, cases of poll evil would be much more frequent than they are.

The dimensions, therefore, which will affect the severity of the bit are: the total length of the branch, the height of the port, and the diameter of the mouth-piece. Of course there are other dimensions which are variable, and which affect the fit of the bit. It is not, if the foregoing be correct, necessary to vary the relation between the upper and lower part of the branch, as suggested by Lieutenant GAYLE; and, since it is determined by experience that the total length of branch desirable is about 5.25 inches, and that

1.75 inches is sufficient length for the upper part, to prevent the bit falling through, these dimensions may reasonably be regarded as fixed. It is surely not desirable to introduce any more variables than are necessary.

The mouth-pieces for cavalry bits may be made of uniform diameter, and, in fact, are made so, as issued to our cavalry. The same is true with regard to width of port. There remain, then, two dimensions which should be variable; in other words, of which different sizes should be issued, viz: length of mouth-piece and height of port. Each length of mouth-piece should have varying heights of port. Major DWYER says of the height of the port that no rule can be given, "this being precisely the most variable dimension of all." In our present bit all ports are alike. It is not considered desirable to make the fitting of bits to cavalry horses too complicated a matter by having too many variable dimensions, thus requiring the manufacture and issue of a large variety of bits. The two dimensions named above will, it is believed, afford a sufficient variety to permit all horses to be reasonably well fitted with bits suitable to each, as to size and severity.

PROFESSIONAL NOTES.

THE AMERICAN SYSTEM OF CAVALRY IN EUROPE.

The maneuvers, last fall, both in Austria and Germany, show the antiquated ideas still underlying the use of cavalry, and limiting its action mainly to the shock and *arme blanche*. In the German service, it is true, the "American system" has been lately introduced, too late, however, for these maneuvers.

The Austrian maneuvers were conducted on an unusually large scale, two armies of 50,000 men each, operating against each other. On the day when the reconnoitering and screening service of the cavalry divisions began, the heads of the hostile armies were about sixty miles apart, their rear about 100 miles. By evening of the second day each army had ascertained the location and composition of its opponent with sufficient accuracy for forming its plans.

The cavalry division of the North Army consisted of twenty-nine squadrons with five pioneer platoons (the Austrian cavalry regiment consists of six squadrons and one pioneer platoon), two rifle battalions and two horse batteries. The squadrons averaged 135 sabers. This cavalry division moved about twenty-five miles ahead of its army, and detached on reconnaissance five officers' patrols of one officer and four men each, and six reconnoitering detachments consisting respectively of ten men, one platoon, one squadron, one squadron with pioneer platoon and telegraph patrol, one and one-half squadrons and one-half squadron. Five of these reconnoitering detachments were to remain in constant touch with the enemy. These bodies, in rear of which the main body of the division was held well in hand, covered a front of something like forty miles, and furnished ample and accurate information of the enemy. Upon the near approach of the opposing armies, this cavalry division withdrew to the eastern flank, where the ground was favorable for cavalry action. The screen it had formed was penetrated in several places by the enemy, who was no doubt largely favored by the hilly and rolling character of the ground, diversified by many woods and watercourses.

That part of screening duty which relates to reconnaissance was

well performed by this division; but in view of the extent of front to be covered to prevent the enemy from penetrating the screen, the detachments were too few, and there does not seem to have been any particular system of screening, such as we are taught. The main body of this cavalry division advanced to and established itself in Guens, which formed a defile, the possession of which would be an advantage to either army.

The cavalry division of the South Army consisted of thirty-six squadrons, four pioneer platoons, two horse batteries and two rifle battalions. Its employment by the commander of the South Army was less in accord with our ideas on the use of the cavalry division, than that of the North Army. For the purpose of reconnoitering, it sent out one officers' patrol, whose duty it was to locate and track the hostile cavalry division, and three reconnoitering detachments, consisting respectively of one-half squadron, one squadron, and one squadron with telegraph patrol; each detachment had assigned to it a certain front on which to conduct its reconnaissance.

Some good riding was done on this duty. One squadron covered sixty-five miles in one day's march, one platoon of the same squadron made eighty-five miles, and a courier from this platoon made one hundred miles in twenty hours on the same horse.

The main body of this large cavalry division clung close to the front of its army; no effort at screening, as we understand it, was made, for the detaching of two and a half squadrons cannot be called screening. To prevent the enemy's reconnaissance, several small, mixed detachments, advance guards in fact, were established at different points in front and flank of the South Army. The information gathered by the cavalry of this army, which, as we have seen, was without the cavalry screen, was less complete and definite than that furnished by the North Army by its cavalry division.

According to our notions, both cavalry divisions should have made a rush for the important defile of Guens and fought for its possession. In that case the cavalry division of the South Army, being superior in strength, would have driven the North army away, instead of allowing the latter to use it as a center from which to reconnoiter the screenless South Army, one day's march distant, and advancing upon the same jointly with the main body of the army, in order to compel it to abandon the place.

As the opposing armies approached each other, the south cavalry division also withdrew to the east flank, and the action of the two cavalry divisions thereafter consisted in frequent combats in covering the flanks of their armies. After the cavalry divisions had thus uncovered the armies, each corps reconnoitered its own front by its divisional cavalry, consisting of half a regiment (three squadrons) to each infantry division. Mixed detachments were used by both armies in protecting the western flank, where the ground was mountainous and close.

The tactical action of these cavalry divisions is illustrated by the collision which took place on the first day of actual hostilities. The

north cavalry division advanced south from Guens, and perceiving the approach of the south cavalry division, followed closely by the infantry columns, made dispositions to delay and observe the enemy; the rifle battalions were ensconced in copses flanking the open ground over which the hostile cavalry must advance, and the horse artillery was brought into position. The advance of the leading regiment of the south cavalry was met by a regiment of the north cavalry. A reconnoitering detachment of the North Army, consisting of one squadron which happened to be in the vicinity, joined in the charge of its own accord, taking the south regiment in flank, which, having moreover been under the fire of the horse artillery of the north cavalry, was defeated. The north cavalry, at this time, seeing plainly the advance of the columns of the South Army, was preparing to withdraw, when the south cavalry division formed for the charge, three of the remaining five regiments in first line, one regiment in second line to the left rear, and one regiment in third line to the right rear. The north cavalry promptly accepted the challenge and wheeled about. In the ensuing charge the south cavalry was not supported by its second and third lines, came under flanking fire at close range from the rifle battalions in the copses, and being also charged in flank by one of the northern regiments and in rear by the reconnoitering detachment above referred to, was defeated. The pursuit was checked by the fire of a dismounted squadron ensconced in the edge of a copse, the fire of the two rifle battalions, the fire of the approaching heads of columns, and a charge by the divisional cavalry of the Seventh Infantry Division, which had hurried across country in support.

The action of the cavalry division and the use of their rifle battalions throughout the maneuvers were similar, and this short statement will suffice to give an idea of the Austrian views on the use of cavalry. Recognizing the necessity of fire action on the part of cavalry, the Austrians have armed it with the carbine, but this cavalry does not seem to feel as yet independent enough to rely on its own strength, and is reinforced by two rifle battalions, foot soldiers, which form part of the cavalry division. The combination of infantry with cavalry may sometimes prove satisfactory when the cavalry division remains more or less stationary, as on the day of battle, when it protects the flank of its army, but it is evident that this combination must paralyze the independent action of cavalry, which is its principal function. It is equally patent that cavalry which is armed with the carbine, but does not derive from it the full benefit of the power it conveys, and fails to feel totally independent, is not abreast of the cavalry "that can fight anywhere except at sea."

The tactical use of the rifle battalions is illustrated in the cavalry engagement described. These cavalry riflemen are concealed, and the enemy led on to charge over ground where he must come under flanking or cross fire at short range. Nothing can be urged against this in itself, for surely nothing is better calculated to take the edge off a charge and break its cohesion than effective flank or cross fire. But we should expect the cavalry to be able to itself deliver that fire where it is called for.

It would almost seem as though the Austrians were in the habit of applying former experiences without due consideration of the attending circumstances, and therefore in a one-sided manner. In 1859 they were much struck by the impetuosity of the onsets of the French infantry, and immediately concluded that the rapid advance with the bayonet in close formation was the safest and only way to counteract the long range fire of the rifle. Without duly weighing the fact that they were confronted by the breech-loader, they applied this method in the War of 1866, only to have their infantry shattered by the withering fire of the breech-loader. In the same war some Austrian cavalry, advancing in pursuit, came—probably by accident—under the fire of hostile infantry at close range, and it seems not improbable, that, based on these occurrences, they have adopted a new article of faith in their military creed to be adhered to unbendingly until proven untenable in the next war.

At any rate, it is evident that they do not have a very clear idea of the object of the carbine in the hands of the trooper, nor of the power of cavalry that can wield the saber and carbine with equal skill.

From notices in military periodicals it appears that this combination of foot soldiers with cavalry was also tried lately in the French maneuvers. Although it would seem generally deprecated in the German service, there was one instance in the maneuvers in Lorraine last fall where some infantry was attached to cavalry one day. In this case, however, the army corps followed close on the heels of that particular detachment.

The last German maneuvers plainly show the necessity for cavalry to be able to fight on foot, and the superiority in battle as well as in reconnaissance of cavalry thus trained over cavalry relying almost exclusively on the saber and lance.

In one instance a corps of three infantry divisions marching northward encountered a corps of two divisions in position with a front of about three miles covering a pontoon bridge over the Rhine. The commander of the south corps intended to engage the enemy with his center first, then with his left, and while thus holding him to his position, to turn his left with a strong column. The reconnoitering cavalry did not resort to dismounted fire action, failed to develop the enemy and locate his left accurately. In fact, it reported that a particular portion of ground on his left was held by small detachments, when in fact an entire infantry division, concealed by the rolling ground, was posted there deployed and ready for attack. In consequence the turning column brought up against this division was surprised and defeated; the whole plan of the commander of the south corps was upset, the turning column which was to engage last became engaged first, and it and the other parts of the corps were defeated in detail.

This instance shows plainly that cavalry when opposed to an opponent skilled in the use of ground, must fight on foot, and by its fire action force the enemy to show his hand, if it wishes to furnish accurate information of the extent of his position. As it was, two

colonels of cavalry were retired on small pensions, a sacrifice it would seem, to an antiquated system which even severity can not make to fit modern requirements.

In another instance, where two corps operated against one another, the one on the offensive was greatly superior in infantry, the one on the defensive had a cavalry corps of twelve regiments. The intention of the offensive was to defeat the opposing corps and cut off its retreat, and its movements were conducted with great skill, compelling the defender to put his last man in the line when the offensive had still one-and-one-half divisions to execute a turning movement. As these last named troops deployed to force the enemy from his line of retreat, they were charged in flank and rear by the cavalry corps. The charge, though made after a gallop of over two miles, was well executed, the squadrons being well in hand to the last, but it is generally accorded a failure, owing to the fire from the intact infantry and the position taken by part of the infantry on ground over which the cavalry could not advance, it being in fact compelled to ride along the front of this infantry without being able to touch it. Had the cavalry corps dismounted for fire action, it might at the very least have considerably delayed the turning movement and produced a greater effect with less loss. It would seem that this charge was useful merely as a matter of instruction in the tactical handling of large bodies of cavalry.

These occurrences have doubtlessly contributed their share toward the overthrow of the old school and the adoption of the American system. The results therefrom remain to be seen in the maneuvers of this or next year.

The present equipment of the German cavalry is not at all suited for dismounted fire action. In the first place, on dismounting the lance has to be disposed of; if there be a way of doing this in a convenient manner, it will still prevent the led horses from being maneuvered with the same ease as ours. Another awkward feature is the manner in which the carbine is carried. It is strapped to the off holster, and rides almost horizontally against the trooper's thigh. In mounting he has to rise straight up in the stirrup and insert his foot in the space between the saddle and carbine, and in dismounting a similar inconvenience is encountered, to which must be added the fact that the saddle turns more easily than ours. To apply the American system with success, changes in the German trooper's equipments seem indispensable.

We frequently express surprise at the delay with which the European cavalries are coming around to the American system. The obstacles in the way of its adoption are quite formidable and both moral and material. Our system requires both horsemanship and marksmanship.

The former will always be found where horses are plentiful and, incidentally, the roads are poor. We have a greater number and better quality of saddle horses than any other civilized nation, and also poorer roads. As a consequence the percentage of Americans that do not know how to ride, is small. So far as horsemanship is

concerned, there would be little delay in rendering mounted bodies newly raised, in case of war, efficient. These conditions do not obtain in Europe. It is true, the Cossacks, born on horseback as it were, are distinguished for their riding, and so are the Hungarians, which is again attributable to a plentiful supply of good horseflesh as well as to the light build and nimbleness of the riders. But as a general rule this does not apply to the continent, and more particularly to its central portion. The supply of horses is limited, and skill in riding is confined to those that are well off. It follows that the average recruit joining a cavalry regiment knows less of horses and of riding than the average American, and that more time must be devoted to his instruction and training. Not only that, but the recruit, as in the German army for instance, is frequently assigned to the cavalry, because the conformation of his body unfits him for the heavy foot marches required of the infantry. The average European cavalryman is, therefore, far from being a fine rider, and great pains are taken to make up for his deficiencies by the most perfect training of the horse.

In regard to marksmanship the conditions in Europe are equally unfavorable as compared with ours. I dare say there is no American who does not know how to use fire-arms, while in Europe but a small percentage of the population ever handles them, and they can not begin to compete with us in this respect. Again, they require more time and instruction than we do. The financial part of the question must also be considered. To provide target ranges and materials, as well as ammunition, for an extensive course of instruction in musketry, is no small expense for a State maintaining a cavalry force of sixty or seventy thousand men. Moreover, in a densely populated country, ranges cannot always be secured in convenient vicinity to the many cavalry garrisons. This, for instance, is one of the questions of the day with the French cavalry.

All these difficulties, however, are not insuperable for those nations whose political existence depends on their armies; by far harder to overcome are the prejudices of the old school of cavalry. The defects of its system, limiting the tactical action of cavalry to the shock and *arme blanche*, became painfully patent to the Germans in the war against the Republic in 1870-71, when the Uhlán was glad to arm himself with a captured chassepot. Since that war the military powers of the old continent have added the carbine to the armament of nearly all the cavalry, but judging from the results of the last maneuvers, their tactical training does not seem to have undergone a corresponding change. Old preferences, old prejudices, even in the most ordinary things of life, are not easy to overcome. The character of the European is essentially conservative, and we should not be surprised at the great resistance offered by the prejudices of a body of 70,000 cavalry to a total revolution of their tactics. How difficult it is to overcome the prejudices of the old school is exemplified in the German cavalry. Its knowledge of our cavalry in the Civil War does not seem to have been derived, at first, from the best authorities, but the new school nevertheless perceived the

soundness of our principle that good cavalry must be able to fight equally well on foot and on horseback. This new school has persistently advocated the adoption of our system, adducing irrefutable proofs of its soundness, as exhibited in the writings of von SCHMIDT, the anonymous author of the work entitled "The Armament, Training, Organization and Employment of Cavalry," and others. It is only a few months since that it has so far overcome blind prejudice as to secure the adoption, experimentally, of our system. If it should be definitely adopted, the other military powers must follow suit if they wish to meet their opponents on equal terms.

These prejudices are rooted in the traditions of the arm, and in the history of glorious feats of arms on many fields, and in so far as they represent homage paid by a nation to the valor of her sons, are not only pardonable but eminently proper; but they become inexcusable and positively vicious when they assume such a character as to render this old school deaf to reason and blind to the total change of conditions and requirements under them of the modern cavalry, whose efficiency, until something better turns up, must be measured by the standard of the American cavalry in the Civil War.

CARL REICHMANN,
First Lieutenant, Ninth Infantry.

NEW METHOD OF LOADING THE REVOLVER.

EDITOR CAVALRY JOURNAL:—Some of our cavalry troops have now been equipped for more than a year with the new Colt's revolver, caliber .38. Paragraph 166 of the Cavalry Drill Regulations having become obsolete, it was hoped that before now a suitable amendment would have been issued by authority, but instead, a report upon the advisability of changing the construction of the revolver was recently required of cavalry officers. Having observed the extreme clumsiness with which the operations of extracting the shells and loading the revolver were performed by enlisted men, even when dismounted, the following system was devised, and after a little practice, was found to be entirely satisfactory:

"166. *Load.*—Being at raise pistol, bring the right hand to a position about eight inches in front of the right breast; drop the muzzle of the pistol to the left—slightly to the front—loosening the grasp on the butt for this purpose; at the same time place the forefinger back of the guard and the end of the thumb on the cylinder latch, the barrel being horizontal and the pistol turned with its side almost horizontal. Press back the cylinder latch, lower the pistol, turning the wrist to the left, grasp the base of the barrel with the thumb and forefinger of the bridle-hand, trigger guard up, muzzle pointing to the left and downward at an angle of about thirty degrees, the cylinder resting on the other fingers of the bridle-hand. Insert cartridges into all but the lowest chamber, push the cylinder back into place, the hammer resting on the empty chamber, grasp the butt with the right hand, and raise pistol. In case the cylinder does not readily drop out of place on releasing the latch, lower the pistol and assist with the forefinger of the bridle-hand. Load is similarly executed from other positions of the pistol. To eject shells, the pistol being held in the bridle-hand as before described: Turn the bridle-hand, raising the muzzle so as to bring the barrel nearly vertical; press on the end of the

ejector rod with the right thumb and receive the shells in the right hand below the cylinder. Individual troopers will be required to practice loading at all gaits."

The advantages of this method will be obvious after a few minutes' practice; and its use, mounted, has convinced me that the present revolver, breaking to the left, is more convenient than one breaking to the right would be, for the following reasons:

1. The shells are more readily extracted and saved.
2. The revolver is more securely held with the reins in the same hand, the cylinder being practically immovable, and loading from the belt or pocket, at rapid gaits, much more secure.

FORT RILEY, KAN., June 6, 1894.

F. T. DICKMAN,
First Lieutenant Third Cavalry.

ALUMINIUM HORSESHOES.

Major C. C. Carr, Eighth Cavalry:

Regarding the set of aluminium horseshoes given me by you for trial, I have the honor to report as follows:

These shoes corresponded in size nearly to the ordinary No. 3; they were about half an inch in thickness. In the toe of each front shoe was set a narrow piece of steel about an inch and a half long, to prevent too rapid wear. The front shoes weighed seven and one-half ounces each; the hind shoes six ounces each; making the total weight of the set twenty-seven ounces. The shoes, both front and hind, were pierced for seven nails each—four on the outside, three on the inside—each nail having its head countersunk separate from the others, instead of a continuous groove. The width of web was nearly one inch, and the shoe was not bevelled on either face.

The shoes were on the 22d of February put on a troop horse which weighed about 1,000 pounds. On March 22d the shoes were reset. On April 21st one of the hind shoes broke near the toe, and the whole set was removed. During the two months the horse was ridden about 140 miles, not including drills, parades, and the ordinary garrison duties. The shoes are much reduced in thickness, of course, but have lasted better than was expected. The front shoes could be used a little longer. The pieces of steel set in the toes of the front shoes added greatly to their wearing qualities; they were worn off at the toes until the pieces of steel were reached, and further wear in that direction prevented. The hind shoes, which had not these steel pieces set in, wore quite thin at the toes, and as stated, one of them finally broke; the other was broken in taking it off.

It would seem from this test that, with the toes protected in the manner described, the shoes would last about two months in ordinary garrison use, and probably half that time in ordinary field work; that is, work over average ground.

The saving in weight is very great, the ordinary No. 3 iron front shoe weighing about seventeen ounces, and the hind shoe fifteen and

one-half ounces; making sixty-five ounces per set, as against twenty-seven for the aluminium. I return to you herewith the worn shoes, except half of one hind shoe, which was lost.

Very respectfully,

E. A. GODWIN,
Captain, Eighth Cavalry.

FORT LEAVENWORTH, KAN., April 25, 1894.

ONE WAY OF CONDUCTING A FORCED MARCH.

On April 14, 1894, being in camp eight miles from Gilroy, Cal., I was ordered to take a detachment of twenty men and make a forced march to the Presidio of San Francisco, Cal., in order to take part, as escort, in the funeral of that gallant soldier, the late Captain A. E. Wood, Fourth Cavalry. The distance was ninety-two miles, and it was accomplished in twenty-three hours and a half without injury to men or horses. As the method pursued in the march had some unusual features, a short description might interest the readers of the JOURNAL.

The detachment, consisting of three non-commissioned officers and seventeen men, left camp at 1:45 P. M., April 14th. The men carried one day's cooked rations in the saddle pockets. Their equipment consisted of carbine and saber, a saddle blanket and bed blanket, one overcoat, and the other ordinary articles of saddle equipment except side lines, lariat and canteen. Three miles from camp the horse of one of the non-commissioned officers stumbled, cut his knee, and was sent back, reducing the detachment to one officer and nineteen enlisted men.

In order to arrive at the Presidio in time to prepare for the funeral it was determined to make the whole distance, ninety-two miles, in two marches, arriving as early as possible the next day. On leaving camp a long swinging trot of about nine miles an hour was taken. The men marched in columns of twos, the members of each two to avoid dust, riding on opposite sides of the road. They were instructed to select the soft parts of the road in order to avoid jarring and pounding the horses' feet too greatly. To insure a uniform gait throughout the column, the detachment marched in two squads, with a distance of from four to ten yards between the first and second squads, maintained by the leader of the second squad, who was required to keep a uniform gait. This prevented the alternate urging and checking of the horses in rear, which is so common on the march, especially at the trot, and so wearisome to the animals in rear. This fast trot was kept up for twelve minutes. The detachment then dismounted, and leading their horses, marched on foot for twelve minutes, traveling nearly, if not quite, four miles an hour. The horses were then ridden at a fast trot twelve minutes, and then led for twelve minutes as before.

This length of period was adopted because it was found during the first day's march at least to be the best suited to the powers of men and horses. At the end of twelve minutes' fast trot the horses would

flag a little. At the end of twelve minutes' leading the men were slightly tired, but the horses had rested and had recovered their breath and traveling power. On the second day these periods were reduced to ten minutes' trot and ten minutes' leading. While the walking in the end made some of the men a little sore-footed, they arrived each day less stiff and fresher than if the same time had been spent continuously in the saddle.

The weather was hot and the horses naturally needed water often. Watering troughs were frequently met with along the road, and if not too much heated the horses were watered, generally after a spell of leading. But the quantity of the water was restricted, and on no occasion were they allowed to take more than eight gulps of the liquid, the commander of the detachment personally making sure of this. These halts for watering lasted only about three or four minutes each. No other halts were made, except when dismounting, which was done very quickly.

Proceeding in this manner, the detachment arrived at Santa Clara, forty-two miles, at 8:30 P. M., having made the distance in six and three-quarter hours, an average of 6.22 miles per hour. The horses seemed in no way fatigued. They were lodged in a stable. About an hour after arrival they were watered and fed and groomed, particular attention being paid to rubbing down their legs.

On April 15th, the horses were watered, fed and groomed at 3 A. M.; the detachment started at 4. The horses moved freely without stiffness. The march was continued in the same manner, trotting and leading alternately. Towards the end of the march a violent head wind, almost a hurricane, was encountered. Newspapers, the next day, rated it at sixty miles an hour. In spite of this, however, there was little fatigue shown by the horses. The Presidio was reached at 1:15 P. M., twenty-three and one-half hours from the time of starting from Gilroy, and nine hours and fifteen minutes from Santa Clara. Distance from Santa Clara, fifty miles; average rate per hour, five and four-tenths miles. Leaving out halts and the rest at Gilroy, the march from Gilroy had thus been performed in fifteen and one half marching hours, or at an average rate of five and nine-tenths miles per hour for the ninety-two miles. Of this distance, the men, if we estimate their rate of marching on foot as three and three-quarters miles an hour, had led twenty-eight miles, marching on foot.

The horses, on arrival, were put in a stable and groomed for forty minutes. Particular attention was paid to hand rubbing, as their legs showed a tendency to swell. During the next two days this hand rubbing was continued, each horse, besides the regular grooming, having his legs rubbed down four or five times a day. No grain was allowed the horses, but they were fed on bran mash, to obviate a tendency to feverishness that was exhibited by some of them.

The day after its arrival, when the detachment turned out for the ceremony, the horses looked so well and acted with so much spirit that it was difficult to persuade bystanders that these same horses had just made ninety-two miles in less than twenty-four hours.

On April 18th, the detachment commenced its return march to Gilroy, arriving there April 22d; horses all in fine order.

It is believed that this method of making a forced march is particularly applicable to small detachments, as bodies not larger than a troop. With larger commands, modifications may be necessary, and it is certain that the same rate of speed could not then be kept up without injury to the horses. But the principle of riding at a fast trot, and leading at a fast walk, is, it is believed, a good one. While it requires more exertion on the part of the man, it is better for him in the end, and certainly better for the horse. Give him a good, level, not too dusty road, with plenty of water along the route; cool weather; a start after mid-day; good stabling the first night out; and it is moderately certain a troop of cavalry, marching in this way, could make 100 miles in twenty-four hours without injuring an animal, and probably in no other way could it be done with so little expenditure of vital force of man and beast.

GILROY, CAL., May 25, 1894.

JAMES PARKER,
Captain, Fourth Cavalry.

BOOK NOTICES AND EXCHANGES.

MAXIMS FOR TRAINING REMOUNT HORSES FOR MILITARY PURPOSES.

By Lieutenant J. Y. Mason Blunt, Fifth U. S. Cavalry. Published by D. Appleton & Co., New York.

Lieutenant Blunt's book has been so frequently and so favorably noticed already by the service and many other journals of the country that it is too well known to need any further commendation.

Its distribution to the cavalry regiments of our army has enabled our mounted officers to familiarize themselves with its contents, and to put into practice many of the suggestions contained therein.

Lieutenant Blunt having enjoyed exceptional advantages for the acquisition of the principles governing the proper training of remount horses, what he has to say upon the subject is of a decidedly clear and practical nature. The book is gotten up in excellent style as regards typography, illustrations and binding.

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